# Inyo-Mono IRWMP Round 1 Project Implementation Application

## Attachment 3: Work Plan

## Introduction

### Goals and Objectives

The Inyo-Mono IRWMP Round 1 Project Implementation proposal addresses the following goals:

1. To secure funding for priority water-related issues and needs in the Inyo-Mono planning region.

2. To build human and institutional capacity and increase collaborative efforts among water-related stakeholders in the planning region.

The Inyo-Mono IRWMP Round 1 Project Implementation proposal and the fifteen projects submitted therein address the following objectives as defined in Chapter 6 of the Inyo-Mono IRWM Plan:

*Objective 1: Protect, conserve, optimize, and/or augment water supply*

*Objective 2: Protect, restore, and/or enhance water quality*

*Objective 3: Provide stewardship of our natural resources*

*Objective 4: Maintain and enhance water, wastewater, and/or power generation infrastructure efficiency and reliability*

*Objective 5: Address climate variability and/or reduce greenhouse gas emissions*

*Objective 6: Increase participation of small and disadvantaged communities in IRWM process*

### Purpose and Need

In the Inyo-Mono IRWM Plan, the Inyo-Mono RWMG identified three principal water issues in the planning region: (1) Water Quality; (2) Water Infrastructure; and (3) Institutional/human capacity. This implementation proposal addresses all three of these issues through the fifteen projects being submitted for funding. Furthermore, the fifteen projects speak to the six Objectives of the adopted IRWM Plan. Funding of this proposal will begin to address the need to focus on the primary issues in the region as described above.

The various organizations and agencies managing water in the Inyo-Mono region have historically had minimal ability to access larger pools of grant funding. Through participation in the Inyo-Mono RWMG, stakeholders have been able to work together to discuss water needs in the region and to develop project proposals. This kind of collaborative forum is essential in a rural region where individual stakeholders may not have the resources to individually seek grant funding. Despite the benefits of such collaboration, however, the lack of resources on the part of some stakeholders is still evident. Several smaller water districts, including those in disadvantaged communities and Tribal communities, were not able to complete project proposals for Round 1 Implementation funding due to lack of human, financial, and/or technical resources.

While the projects being submitted through this implementation proposal begin to fulfill the various water issues and needs in the region, the RWMG recognizes that there is much work to be done well into the future and that the IRWM process in the Inyo-Mono region will have benefits for many years to come.

## Project List

Below is a list of the fifteen projects being submitted for funding in this proposal, along with the project proponent (implementing agency) and current status. The ranking of projects as determined by the RWMG is also included (1 being the highest rank; 15 the lowest). Project abstracts are provided in the Work Plan for each project in this document.

| Inyo-Mono RWMG Ranking | Project Title | Project Proponent | Current Status |
|---|---|---|---|
| **1** | Safe Drinking Water and Fire Water Supply Feasibility Study for Tecopa, California | Amargosa Conservancy | Ready to begin implementation; feasibility study |
| **2** | Coleville High School Water Project | Eastern Sierra Unified School District | Plans, designs, and preliminary work completed; ready to begin bidding process and construction |
| **3** | Round Valley Joint Elementary School water supply reliability enhancement | Round Valley Unified School | Plans, designs, and preliminary work completed; ready to begin bidding process and construction |
| **4** | New Hilltop Well | Wheeler Crest Community Services District | Preliminary engineering designs complete; ready to develop final drawings and permits to begin construction |
| **5** | Well Rehabilitation – Phase I | Mammoth Community Water District | Ready to begin implementation; project consists of study and testing |

| Inyo-Mono RWMG Ranking | Project Title | Project Proponent | Current Status |
|---|---|---|---|
| **6** | Laws, Independence, and Lone Pine Pump Operation Redundancy and SCADA Improvements | Inyo County Department of Public Works | Ready to begin implementation |
| **7** | CSA-2 Sewer System Upgrade Project | Inyo County Department of Public Works | Ready to begin implementation |
| **8** | Secondary Water Tank – Birchim Community Services District | Birchim Community Services District | Ready to begin implementation |
| **9** | Brackish Water Resource Study | Indian Wells Valley Water District | Ready to begin implementation |
| **10** | Laws and Lone Pine Tank Project | Inyo County Department of Public Works | Ready to begin implementation |
| **11** | Water Meter Installation – Final Phase | June Lake Public Utilities District | Ready to begin implementation |
| **12** | Lone Pine, Independence, and Laws Water Meter Project | Inyo County Department of Public Works | Ready to begin implementation |
| **13** | Wastewater Treatment Plan Upgrades – Phase I | June Lake Public Utilities District | Ready to begin implementation |
| **14** | Inyo/Mono Watersheds Invasive Weed Control Project | Inyo County/Inyo-Mono Agricultural Commissioner's Office | Project is ongoing |
| **15** | Town of Mammoth Lakes Stormwater Master Plan Development and Implementation | Town of Mammoth Lakes | Planning project; ready to begin implementation |

**Integrated Elements of Projects**

There are several different linkages among projects that increase the value of the overall implementation proposal. Two projects address water quality and water supply reliability needs at schools within the region. Both of these projects are highly ranked (#2 and #3). Three projects address water infrastructure, water use, and water supply needs within three Inyo County disadvantaged communities (Laws, Lone Pine, and Independence). This proposal also begins to address the needs of small community service districts (CSDs) that typically are comprised of volunteer boards and little to no staff. Two projects take place within CSDs in Mono County. Three projects are feasibility and data collection studies that will allow the project proponents to plan for future water supply improvements as well as storm and flood preparedness. The two water meter studies will help the affected communities conserve and use water more wisely and efficiently.

Perhaps the greatest synergy among the projects, however, is the one that stems from project proponents (and other RWMG participants) working together to discuss project needs, share technical information, and assist each other in developing project proposals. The process of developing the Inyo-Mono IRWM Plan and building this implementation proposal has created a sense of community among RWMG participants as well as a sense of investment in improving water quality, water supply reliability, and watershed health throughout the region.

## Regional Maps

Figure 1a shows a map of land ownership within the Inyo-Mono IRWM planning region. Overlaid on this map are the locations of the 15 projects being submitted in this implementation proposal.

**Figure 1a.**

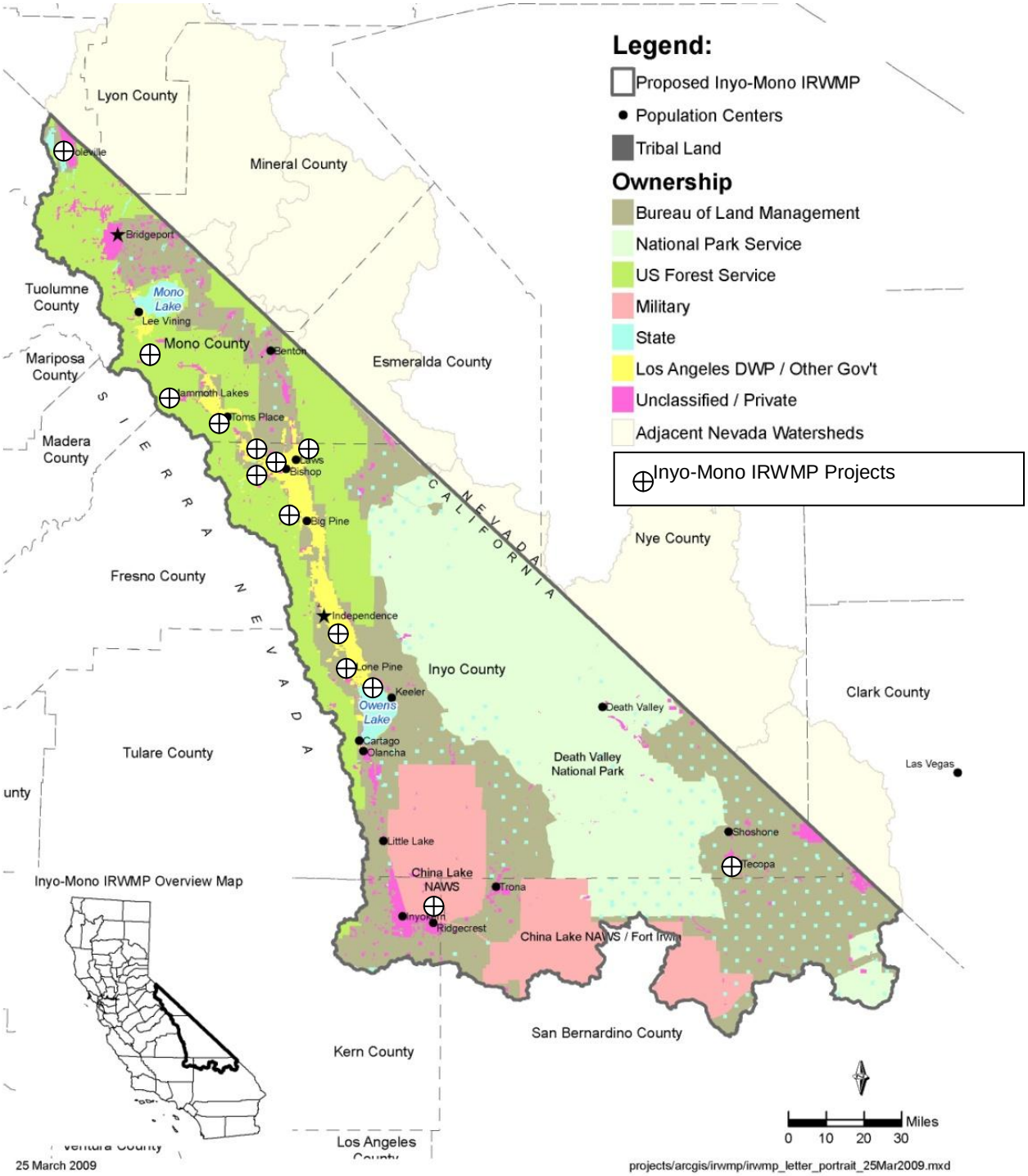


Figure 1b is a map depicting the watersheds, major surface water resources, and groundwater basins in the Inyo-Mono IRWM planning region. Overlaid on this map are the locations of the 15 projects being submitted in this implementation proposal.

**Figure 1b.**

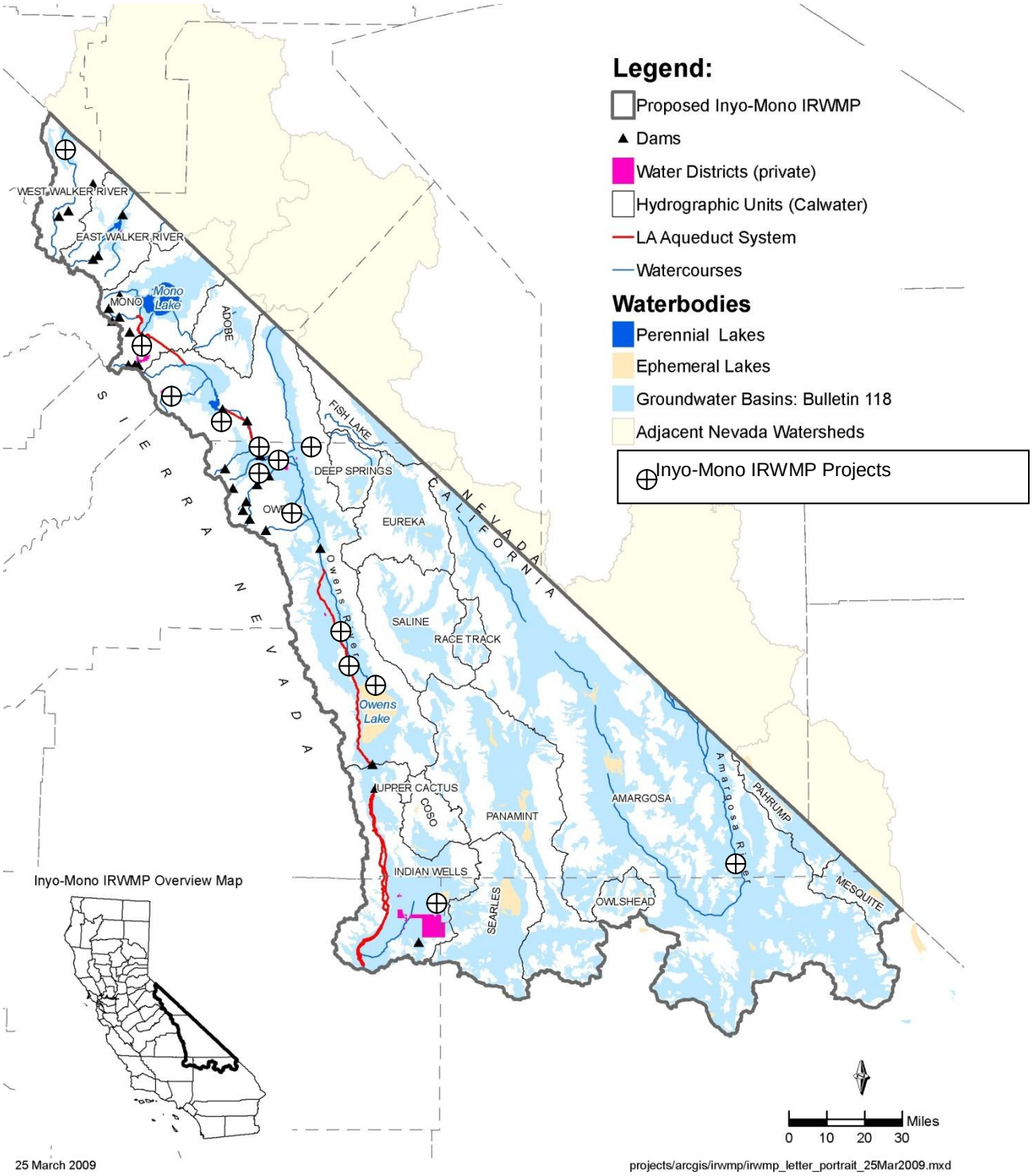
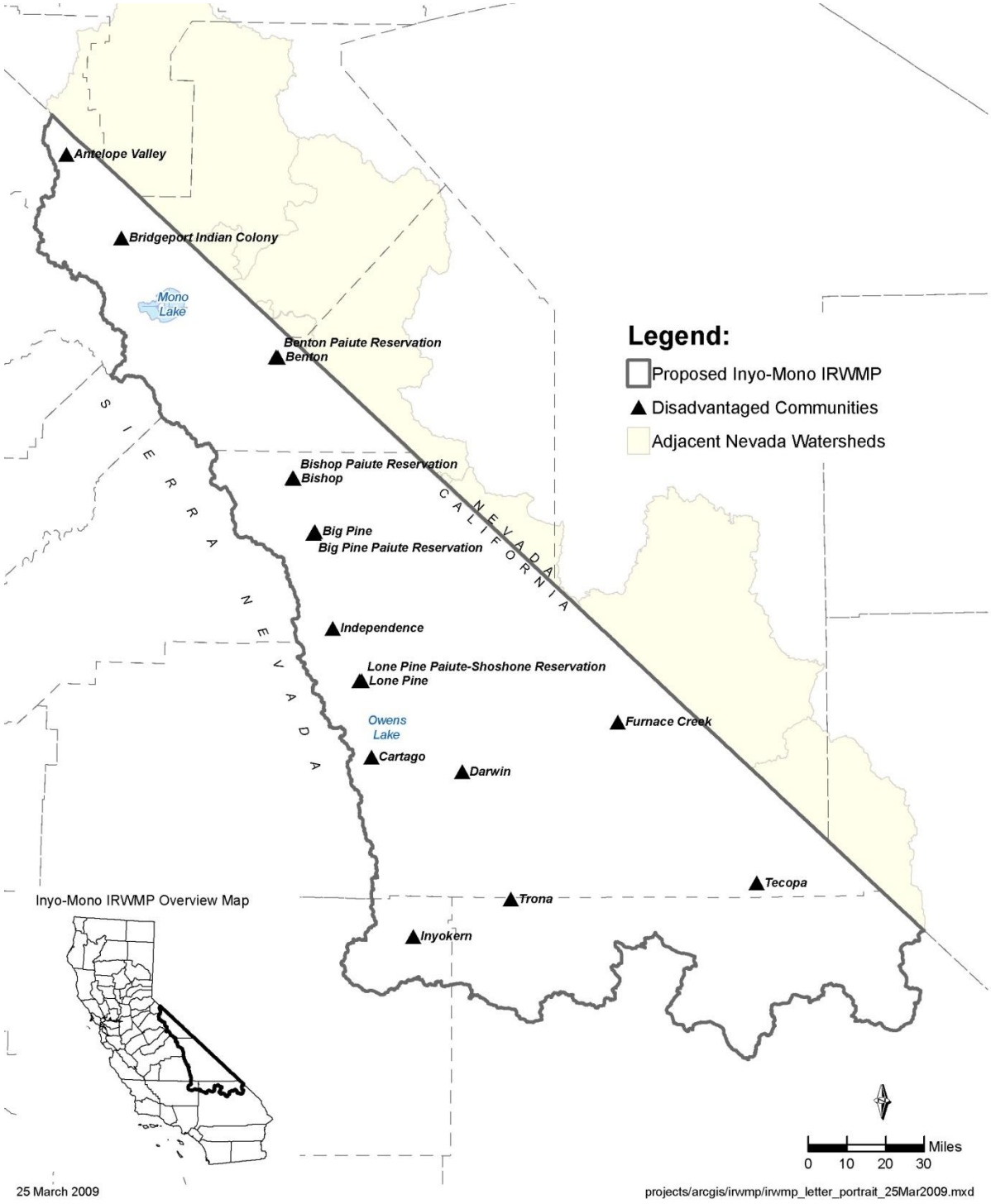


Figure 1c depicts the locations of disadvantaged communities within the Inyo-Mono IRWM planning region.

**Figure 1c.**



### Completed Work

A description of completed work, if applicable, is included in the individual project work plans discussed below.

### Existing Data and Studies

A description of existing data and studies, including reference to supporting documentation, if applicable, is included in the individual project work plans discussed below. All supporting documentation is being provided as hardcopy and on CDs but is not being made available via the Bond Management System due to limitations on file size.

### Project Maps

Individual project maps are included with the project work plans below.

### Project Timing and Phasing

A description of the project timing and phasing, if applicable, is included in the individual work plans discussed below.

## Tasks

The specific tasks and activities for each project are described in the individual work plans below.

The administration of the overall implementation of the Inyo-Mono IRWM Plan and associated projects will take place through Project Staff and the Fiscal Agent. The Project Staff consists of a Project Director, a Project Manager, and a Project Assistant, each working part-time. The Project Staff will administer the following tasks: (a) coordinating and convening regularly scheduled RWMG, Administrative Committee, and, as needed, ad-hoc work group meetings; (b) coordination with Fiscal Agent and Project Proponents regarding reporting requirements; and (c) coordination with Monitoring and Evaluation work group. Project Staff will be available to Project Proponents, the Fiscal Agent, and DWR to answer questions, address concerns and assist with various needs related to Plan implementation.

The Fiscal Agent (Central Sierra Resource Conservation and Development, Inc.) will be tasked with executing the grant agreement with DWR and administering the funds to Project Proponents. In addition, the Fiscal Agent will be responsible for all necessary financial reporting to DWR.

## Project #1: Safe Drinking Water and Fire Water Supply Feasibility Study for Tecopa, California

## Project Proponent: Amargosa Conservancy


**Abstract:**

The disadvantaged communities of Tecopa and Tecopa Hot Springs, which are located in a desert area in remote Southeastern Inyo County, have no sources of potable drinking water. Although many households have domestic wells, water from the wells does not meet the State's safe drinking water standards for dissolved solids such as fluoride and arsenic. Currently, residents either drive 45 miles to purchase purified water, or they drink the well water—which subjects them to long term negative health effects. Moreover, during frequent power outages that plague these communities (especially during periods of high winds and intense summer heat) the existing wells cannot be operated. In addition to lack of a potable water supply, these communities lack facilities to quickly refill fire fighting apparatus used by the local volunteer emergency services district. Recent fires in the area have demonstrated the severity of this problem.

At two public meetings conducted in these communities in the fall of 2010, remedies for these two critical water supply and water quality problems were identified as the top priorities that should be addressed.

The grant funding will be used to conduct a feasibility study to determine whether safe drinking water fire flow water storage facilities can be provided in the two communities. Instead of focusing on the delivery of potable water to every household, the study will analyze the feasibility of constructing a public drinking water station in each community which would provide treated, potable water where residents could fill drinking water containers. The study will also identify a location in each community where an above ground water storage tank for fire flow could be located and will identify the type of storage tank that should be used.

The project area is an economically depressed, low-income area, disadvantaged community with a high number of senior citizens on fixed incomes. The community's goal is to develop ecotourism—especially now a portion of the Amargosa River which flows through the project area has been designated as America's first desert Wild and Scenic River. Accessible safe drinking water and adequate fire flow storage will improve the health and safety of the residents and visitors to the affected communities and will assist in attracting potential residents and businesses in this underserved and remote region of Inyo County. Documentation of the disadvantaged community status of the region and letters of support from the community are included in Attachment 12.

The project is consistent with the following regional objectives and resource management strategies of the adopted IRWM Plan:

Objective 1: Protect, conserve, optimize and/or augment water supply by:

- Improving water supply reliability
- Improving system flexibility and/or efficiency

- Addressing locate supply issues through various techniques, including, but not limited to: groundwater recharge projects, conjunctive use of water supplies, water recycling, water conservation, water transfers, and precipitation enhancement
- Optimizing existing storage capacity
- Conserving and/or adapting water uses to future conditions.

Objective 2: Protect, restore and/or enhancing water quality by:

- Supporting compliance with current and future state and/or federal water quality standards
- Protecting public and/or aquatic ecosystem health
- Matching water quality to water use

Objective 4: Maintaining and enhancing water, wastewater, and/or power generation infrastructure efficiency and reliability by:

- Systematically and strategically rehabilitating and replace aging water, wastewater delivery and/or wastewater treatment facilities in rural communities, including tribal lands
- Ensuring fire protection capacity
- Improving energy efficiency of water systems and uses

Objective 6: Increase participation of small and disadvantaged communities in IRWM process by:

- Engaging regional communities in collaborative water and natural resource related efforts
- Providing assistance for tribal and DAC consultation, collaboration, and access to funding for water programs and projects

**Completed Work**

The Inyo-Mono IRWM Group, through the project proponent - the non-profit organization the Amargosa Conservancy - has contacted members of the communities of Tecopa and Tecopa Hot Springs to determine the most pressing needs of the communities that could be met by a project using the requested grant funds. In the Fall of 2010, meetings were conducted in each community. Based upon such communication, this proposal was prepared.

**Existing Data and Studies**

The Inyo-Mono IRWM Group and the Amargosa Conservancy have collected data concerning the disadvantaged status of the community of Tecopa. Also, the Conservancy has discussed the water supply and fire water supply needs of the communities with residents of the communities.

**Project Map**

Maps showing the communities of Tecopa and Tecopa Hot Springs can be found in Figures 2 and 3. The feasibility study will determine whether potable water supply stations and/or fire water storage tanks can be provided in these communities.

### Project Timing and Phasing

The project is not a part of a multi-phased project complex. The proposed feasibility study can be conducted on a stand-alone basis and if grant funding is provided, the study will commence immediately thereafter. If the feasibility study determines that potable water supply stations and/or fire water storage tanks can be provided in Tecopa and/or Tecopa Hot Springs, funding for a follow-up project to construct the facilities will be sought.

## Tasks

### CEQA Compliance

CEQA compliance will commence as soon as grant funding is awarded. Because the project is only to conduct a feasibility study, it is anticipated that the project is exempt from CEQA because it will have no adverse impact on the environment. If that is correct, a Notice of Exemption will be filed; on the other hand, if necessary, a negative declaration will be prepared, circulated for public comment and filed. One product of the study will be to identify the level of CEQA compliance that will be required if potable water supply stations and/or fire water storage tanks can be provided in Tecopa and/or Tecopa Hot Springs.

### Permitting, Easements, Rights of Way

Because the project is only to conduct a feasibility study, it is not anticipated that any permits, easements, acquisition of land or rights of way will be required to be obtained. If it is determined that the Consultant conducting the study will need access to private property, the Consultant will be required to obtain permission from the property owner to enter the property and to conduct such work as may be necessary. One product of the study will be to identify any property rights together will associated estimated costs that will be required to be obtained if potable water supply stations and/or fire water storage tanks can be provided in Tecopa and/or Tecopa Hot Springs.

### Consultant Selection

As soon as grant funding is awarded, the Amargosa Conservancy will commence the process of selecting a qualified professional consultant to conduct the feasibility study. A request for proposals to conduct the study will be disseminated in the professional community. The Conservancy may conduct a pre-proposal meeting with prospective consultants. Proposals will be due within 45 days of the dissemination of the information. All proposals will be required to include a description of how the successful consultant will comply with any labor compliance requirements of the grant. Each proposal will be required to present a detailed schedule for conducting and completing the study within no more than a one-year period following the award of a contract. The Board of Directors of the Amargosa Conservancy will review the proposals and award a contract to conduct the study based upon the most qualified proposal. The contract will not be awarded until any required CEQA compliance has been completed. It is anticipated that the contract will be awarded within 30 days of the submission of proposals.

**Reporting and Monitoring**

The consultant awarded a contract to conduct the feasibility study will be required to submit a monthly report to the Amargosa Conservancy summarizing the work completed during the month. The Amargosa Conservancy will monitor and oversee the work by reviewing the report and through meetings with the consultant. The Amargosa Conservancy will submit quarterly progress reports to the IRWMP group (and directly to DWR—if requested) and the final report on the feasibility study will be submitted.

**Tasks to be Performed by Consultant**

The consultant will: (1) consult with the local fire district, representatives of the two communities and representatives of the County of Inyo to determine their needs and their thoughts, (2) sample and analyze the groundwater in the two communities to identify the level of water treatment that will be necessary to provide potable water to the two communities, (3) evaluate the flow of groundwater required to provide potable water and to provide water for the fire water storage tanks, (4) determine whether existing groundwater wells can be used to supply the necessary water and, if not, identify an additional source or sources of groundwater, (5) identify the locations for the potable water supply stations and fire water storage tanks, (6) provide conceptual design and conceptual design drawing for the potable water supply stations and/or fire water storage tanks, (7) provide estimates of the costs for providing the potable water supply stations and fire storage tanks, (8) provide a estimate of the ongoing operation and maintenance costs of the facilities, (9) provide a description of the level of CEQA compliance for constructing the facilities and a description of the permits (including any easements, rights of way, etc.) that will be required to construct the facilities, (10) if it is determined that it is not feasible to provide potable water supply stations and/or fire storage tanks, provide an explanation of why it is not feasible to provide such facilities, and (11) submit monthly progress reports and a final feasibility study report to the Amargosa Conservancy.

**Tasks to be Performed by Amargosa Conservancy**

The Amargosa Conservancy: (1) will prepare a request for proposals for the feasibility study, (2) may conduct a pre-award meeting with potential consultants, (3) review proposals received and award contract to the best qualified proposal, (4) monitor and oversee the work performed by the consultant, (6) facilitate meetings between the consultant and the local fire district and with residents of the communities, and (6) submit quarterly reports to the IRWMP group (and directly to DWR if requested) and a final report on the feasibility study.

**Figure 2.** Project map for Safe Drinking Water and Fire Water Supply Feasibility Study for Tecopa, California

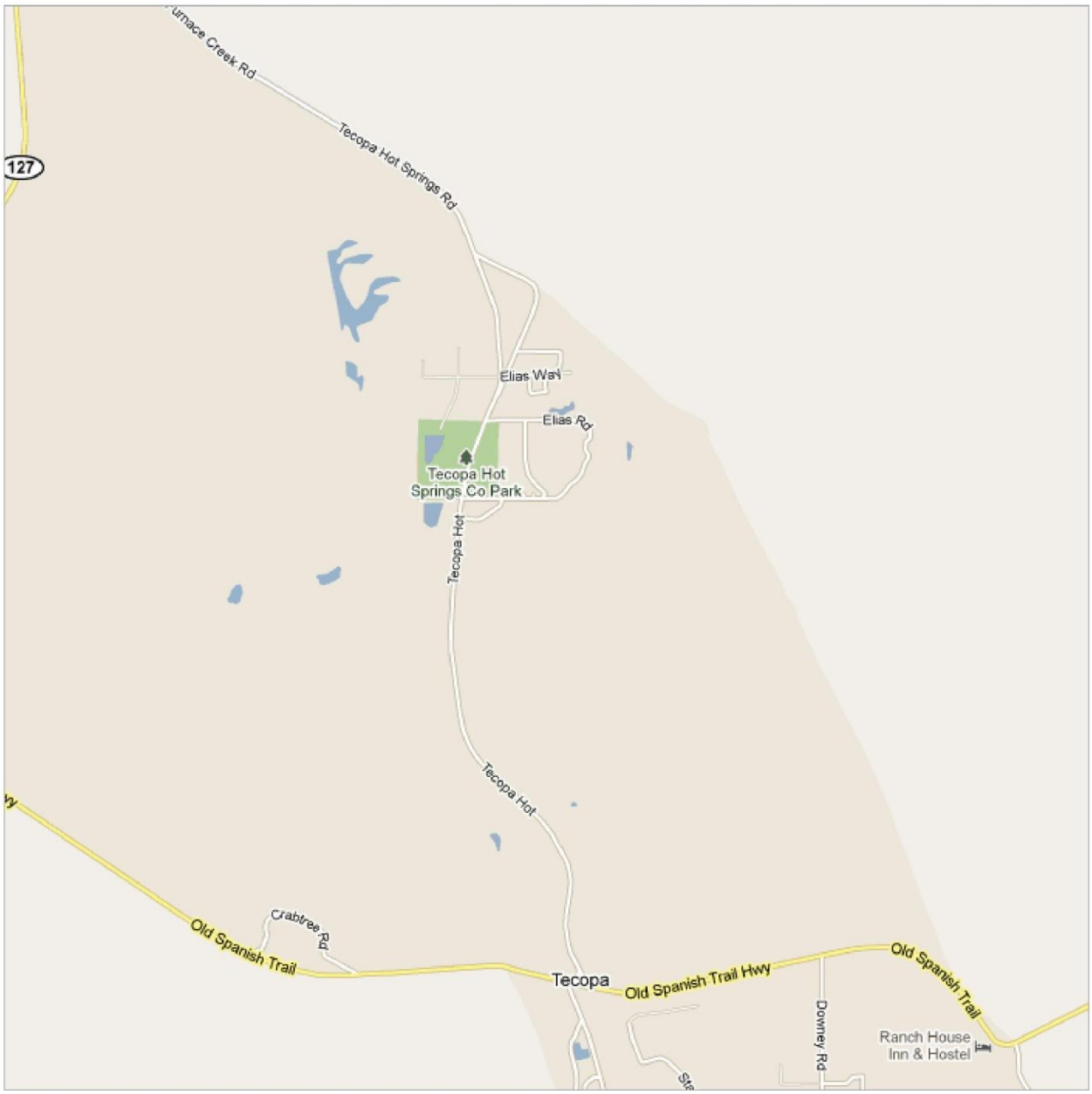
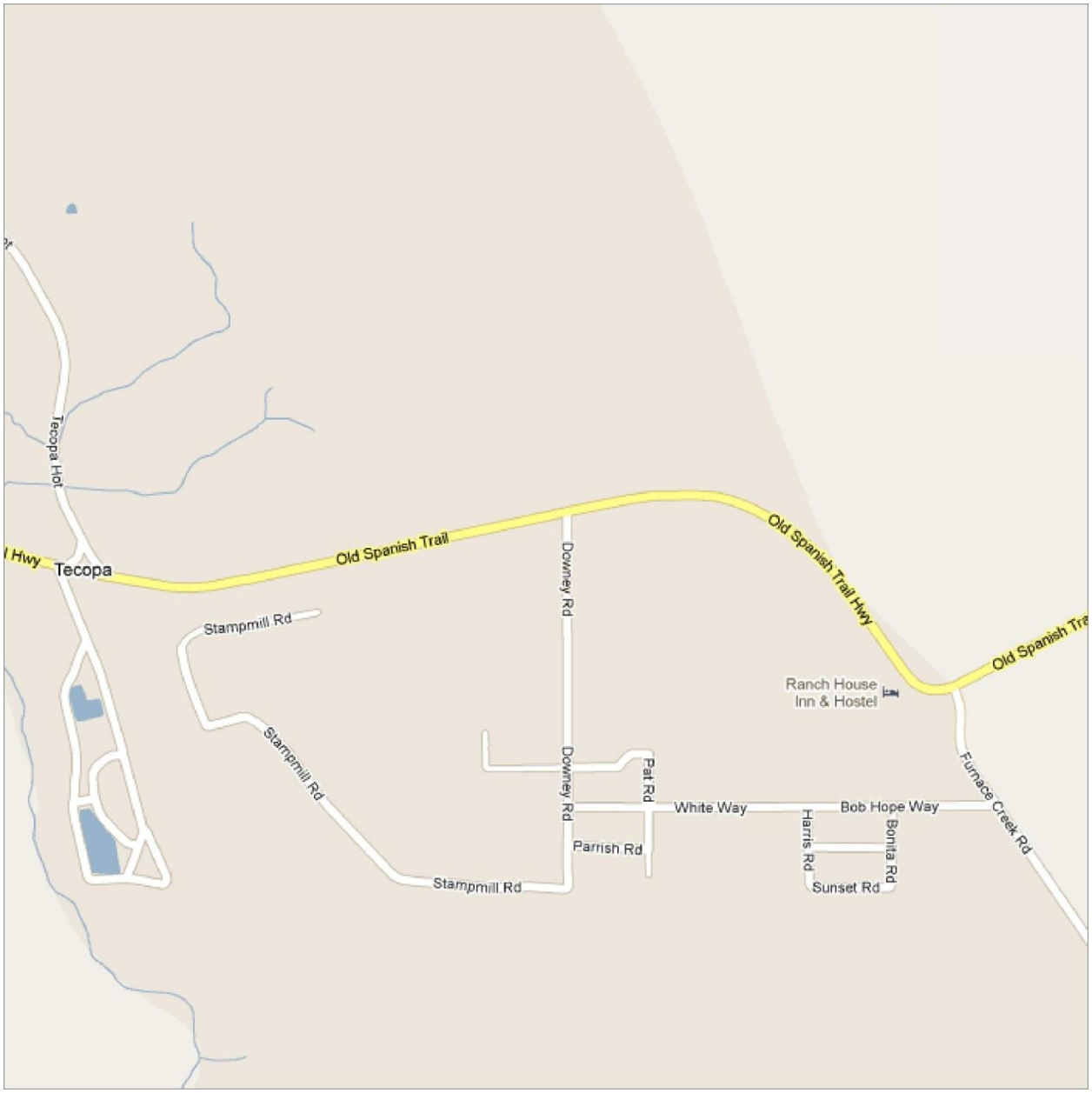


**Figure 3.** Project map for Safe Drinking Water and Fire Water Supply Feasibility Study for Tecopa, California



## Project #2: Coleville High School Water Project

## Project Proponent: Eastern Sierra Unified School District

### Abstract

The purpose of this proposal is to eliminate the current public health hazard at the Coleville Campus which is the uranium found in the well water. California has set the uranium MCL @ 20pCi/L (see Coleville Document G). The Federal Safe Drinking Water Act of 1974 and its respective updates require that maximum containment level (MCL) standards be applied to all water intended for public drinking water supply. MCL standards are both primary and secondary. Primary standards are legally enforceable and are imposed for the protection of public health and safety. In comparison, secondary standards are generally non-enforceable guidelines, which are imposed for the protection of aesthetic quality (taste, odor, appearance) and cosmetic quality (skin or tooth discoloration). Under these primary and secondary MCL standards, the USEPA regulates more than 90 contaminants and the California Department of Public Health (CDPH) regulates approximately 100 contaminants. MCL standards for total dissolved solids (TDS) are used to indicate the aesthetic characteristics of drinking water, such as odor, taste, and appearance, and to indicate the presence of chemical constituents which could affect water treatment methodologies.

In order to meet this standard the district needs to employ some form of treatment. The treated water needs to be available at all potential points of use at the various school buildings on the site. It was determined that ion exchange treatment was the best option for the school district. Water blending could not be used because of a lack of compliant water to work with. The district does not have any surface water rights and the likelihood of getting compliant water out of a new well was minimal (see Coleville Document J,pg.2). Reverse osmosis was another treatment option. This system would meet the MCL standard, but there was no significant cost savings and the corrosive nature of the treated water was a concern with the age of the distribution system.

Successful implementation will improve the site's water quality to a level that will meet the California Safe Drinking water Act Maximum Allowable Value (MAV). Eastern Sierra Unified School District has also identified additional objectives that will be addressed by this project. In addition to water quality the proposed project will also improved water supply reliability, replace a significant portion of the existing water system, improve fire protection capacities, and improve energy efficiency. While these added objectives will create substantial benefits for the Coleville Campus, they do so without much of an increase to the original scope of work.

The objectives identified by the ESUSD have addressed a number the IRWM plan objectives as well. Objective No. 1 "protects, conserve, optimize, and augment water supply" the district will achieve this by improving water supply reliability. In the design of the new water system the storage capacity of potable water has been increased from 900 gallons to over 12,000 gallons giving the school up to four days of reserves. Redundant water distribution booster pumps have also been added. Objective No. 2 "protect, restore and enhance water quality" the new system will support compliance with current and future state and federal water quality standards and match water quality to water use. Treated water will meet the MAV for uranium and will be isolated from a

majority of the sites irrigation. Objective No. 4 “Maintain and enhance water, wastewater, and power generation infrastructure efficiency and reliability.” Added storage to the water system will increase the fire protection capacities. The energy efficiency will improve with the addition of variable frequency booster pumps and added head pressure as a result of the relocation of the water storage. Objective No.6 “Increase participation of small and disadvantaged communities in IRWM process.” Coleville is a small rural community in eastern California.

The two on site wells, which are the sole water source for the campus, will pump to a new 40x60 maintenance building for treatment and storage. This structure will house the three storage tanks, ion exchange unit, booster pumps, pump controls, back flow preventer, extra storage, etc. Raw water will be pumped into a 6800 gallon storage tank (A). This tank will provide the source water for irritation and treatment. Water to be treated will be pumped from tank “A” at a rate of 10 gpm through the Ion exchange unit containing a strong base type 1 resin (A600 Purolite). This resin will remove the uranium by attaching to the uranium molecules and the treated water will be stored in two addition 6800 gallon tanks. This storage capacity will provide the campus with a minimum of four days of potable water at the current usage of 3500 gallons per day. The 20,000 plus gallons of stored water (treated and raw) will also be available at two new fire hydrates for emergency fire protection. The Ion exchange unit consists of three cylinders connected in series all containing the type 1 resin. The life of the resin should be a minimum of 8 years. When first cylinder reaches its useful life it will be rotated out and disposed of by a company qualified to handle low level uranium. Then a new cylinder will be added to the third position.

**Completed Work**

The following work either has been completed or is in process and will be completed prior to any awards. Design/Engineering of the water treatment **ion exchange units** that will be used to remove the uranium from the water. REMCO the company that designed the treatment units has also constructed them and the unit is currently stored at the Coleville campus. The **technical report** required by California Department of Public Heath has been completed by R.O. Anderson Engineering. This report describes the current water system, water supply, and the water quality. It also shows the overall concept of how the water quality problem will be mitigated. This report was the fundamental blue print for the final architectural and engineering design. The **Geotechnical investigation** has also been completed by Sierra Geotechnical Services. All **plans and specification** have been prepared by Aspen Street Architects and R.O. Anderson engineering and have been approved by the Division of State Architects (DSA). The **negative declaration** for CEQA is currently in process and will be complete prior to the grant award date.

**Existing Data and Studies**

The following documents are being submitted as supporting documentation for this project:

A) ESUSD Coleville Water Technical Report
B) Geotechnical Investigation
C) Coleville Water Plans, Drawings, and Blueprints
D) ESUSD Coleville Water – Project Manual – Specifications

E) Coleville High School Water DSA Final Approval
F) R.O. Anderson Flood Diversion Berm Letter and Response to Review Comments
G) Public Health Goals for Chemicals in Drinking Water
H) Uranium in Water
I) California Drinking Water Chemical and Characteristics
J) Antelope Groundwater Report
K) Health and Safety Code

## Tasks

### Budget Category (a): Direct Project Administration Costs

#### Task 1: Administration

Eastern Sierra Unified School District (ESUSD) has been administering this project as part of the bond construction program. All the project accounting has been administered by the bond coordinator. Accounting task have and will continue to include accounts payable, budgeting and annual audits. Project budgets are developed with the help of the facilities department and the project architect.

All other costs associated with the administration of the project have and will continue to be administered by the facilities department. Tasks include but not limited to planning/ design/ engineering/ environmental documentation, construction/implementation, environmental compliance.

The administration of the Coleville high School water project has all been done in house and is an in kind contribution toward the twenty five percent match.

Deliverables: Preparation of time sheets and other deliverables as required.

#### Task 2: Labor Compliance Program

ESUSD has out sourced labor compliance to Golden State Labor Compliance.

Deliverables: Submission of Labor compliance contract.

#### Task 3: Reporting

Reporting will be coordinated and submitted by the director of facilities. The bond coordinator will provide the financial reports; architect and project manager will provide reports directly related to the construction of the water project and the director of facilities will provide the reports as it relates to project completion and implementation.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement.

**Budget Category (b) Land purchase/Easement {N/A}**

**Budget Category (c): Planning/Design/Engineering/Environmental Documentation**

**Task 4: Assessment and Evaluation (Complete)**

In 1996 Eastern Sierra Unified School District was determined that the uranium in the water at the Coleville campus was not within Maximum Allowable Value (MAV). Subsequent tests in 2005, 2007, and 2008 have confirmed those findings (see Coleville Document A, appendix 4). In 2008 the **technical report** was prepared by R.O. Anderson for the California Department of Public Health and Mono County (see Coleville Document A). This report identifies the major components of the current water system, source water, water quality issues and a new system design over view for correcting the high uranium levels. It was this report that Aspen Street Architects and R.O. Anderson used to complete the final design work. In 2009 Sierra Geotechnical Services performed a **geotechnical investigation** of the purposed new water building site (see Coleville Document B). In response to the geotechnical investigation California Geological Survey raised concerns over potential alluvial fan flooding. This concern was mitigated with addition of a **flood diversion berm** (see Coleville Document F)**.**

Deliverables: Water System Technical Report, Geotechnical Investigation, Flood Diversion Berm Mitigation

**Task 5: Final Design (Ref. plans and Specifications) (Complete)**

**Sub Task 5.1: Project Plans**

A: Civil- site, grading and Utility plan (ref. A-100, C3)
B: Building floor plan & Details (ref. A-101, A-102, A-103, S2.1, S2.2, S3.1)
C: Schematic water treatment (ref. C4, C5, C6, C7, C8, P1, P2, P3)
D: Electrical and Mechanical (ref. E1, E2, E3, EH1.1, EH2.1, EH3.1, M2.0)

**Sub Task 5.2: Project manual**

A: Bidding and Contracting Requirements (ref. 01-21)
B: General Requirements (ref. 01110-01770)
References- standards, codes, definitions; quality assurance (ref. 1420, 1430)
C: Specifications by Division
Site Construction (ref. 02245-02601)
Concrete (ref. 03301)
Metals (ref. 05501)
Wood and Plastics (ref. 06100-06200)
Thermal and moisture protection (ref.07210-07901)
Doors and Windows (ref. 08110-08710)
Finishes (ref. 09250-09901)
Specialties (ref. 10523)
Equipment ( as provided by consultant)
Mechanical (ref. 15010-15830)
Electrical (ref.16100-16461)

Deliverables: Completion of project plans and specifications at 100% (see Coleville Documents C & D)

**Task 6: Environmental Documentation (Complete)**

ESUSD is the lead agency for this water quality project. Because of the size of the project and the design of the treatment system it has been determined not to have a significant effect on the environment. The District is currently working with Sierra Geotechnical Services who is preparing a Negative Declaration.

Deliverable: Negative declaration and CEQA check list.

**Task 7: Permitting (Complete)**

Submit plans and specification to the Division of State Architects (DSA) for final approval. Aspen street Architects will be working with DSA in the approval process and handling the back checks. Once an approval letter is received from DSA the project can go to bid.

Deliverables: Approval letter from DSA (see Document E)

**Budget Category (d): Construction/Implementation**

**Task 8: Construction Contracting**

Currently ESUSD has completed tasks 1-7 and is ready to proceed with construction contracting. Once all final funding is in place the District will prepare an Advertisement for Bids with the architect. Since the District uses Uniform Public Construction Cost Accounting the advertising and notification requires 30 days. Early in the 30 day notice period a pre-bid walk will take place at the Coleville campus. During the 30 day period the architect will also be address Requests for Information and clarifications. The 30 day notification period will conclude will the bid opening. Bids will be opened and evaluated and a recommendation sent to the school board for their approval and awarding of the contract.

Deliverables: advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract

**Task 9: Construction**

Once the contract is awarded for the construction of the new water system at the Coleville campus the preconstruction meeting will be scheduled. This meeting will involve all parties involved in the project owner, architect, contractor, sub-contractors, labor compliance, Inspector of Record. The main three items on the agenda will be a site walk, overview of plans and specifications, and scheduling. Scheduling will be the main concern for the district at this point. All the elements directly related to the construction of the water system will be under the responsibility of the contractor, with the district providing oversight and inspections.

**Subtask 9.1 Scheduling**

A. Long lead time equipment: Because of the nature of the project there are several Pieces of equipment that will have long lead times and the tanks deferred approvals will need to be completed with the Division of State Architects.

B. Mobilization and Site preparation: Once the lead time and deferred approvals have been scheduled the mobilization and site preparation will be scheduled. The district was targeting the fall of 2011 to be breaking ground. With funding timelines, bidding, lead time and deferred approvals the contractor will most likely break ground in the spring of 2012.

C. Project Construction: The construction of the water system is scheduled for 120 days. 90% of the work will be done outside of student areas, therefore allowing for work to begin in the spring and be completed after summer break starts. Contractor will provide a detailed schedule of tasks to the Architect and School District prior to starting work.

**Subtask 9.2 Project construction**

When site construction begins the contractor will mobilize and prepare the site for the work that will take place. This will include storage, fencing, construction office, temporary utilities, etc. After the site is ready for construction to begin the contractor will proceed with scheduled tasks. Those tasks will include site grading; building pad preparation; trenching, installation of foundation and slab; construction of the maintenance building; installation of underground piping, valves, and conduits; installation of storage tanks; installation of plumbing, electrical, pumps, controls, and treatment system.

**Subtask 9.3 Performance testing**

At the completion of construction the District's contract operator will inspect the system to verify that the system is fully operational. This will involve checking flow rates, back flow preventers, pumps and control systems, testing ports, etc. After the mechanical system has been verified water quality will be tested. First test will be to confirm the proper sanitizing of the whole water system new and existing. Second test will be the radiological samples.

**Budget Category (f): Construction Administration**

**Task 11: Construction Administration**

The facilities department at ESUSD will be overseeing the construction of this project. The director of facilities will be the Districts project manager. He will work directly with the architect, Inspector of record, and contractor and make daily visits to the site to verify work progress and resolve unforeseen issues. Along with daily visits there will be weekly meetings with architect, IOR and contractor to review schedules, safety problems, potential changes, schedule of values, etc. The project manager will be responsible for reviewing change order requests, pay applications, and labor compliance as well as maintaining the other records for the project.

The accounting for the project will be done by the bond coordinator. All accounts payable will go though her office and she will report construction budgets to the school board. She will also prepare any required financial reports necessary to satisfy the grant requirements.

## Project #3: Round Valley Joint Elementary School's water supply reliability enhancement

## Project Proponent: Inyo County


**Abstract**

Round Valley Elementary School is presently served by only one well. That well is shallow and the steal casing is deteriorating. Over the last two years the water system has failed three times forcing the school to bring in porta-potties, bottle water and the need of potentially closing school due to the shortage lack of water. Current state water standards require new system have redundant sources. The propose project will drill a new well, providing a second source and line the existing well with new casing. The school has had a history of water outages and pump failure. Additionally the present system does not have capacity for fire protection and currently has less than 3% of minimal fire standard. We currently have 28 gallons per minute of capacity compared to the minimum residential fire standard of 1000 gallons minute for two hours.

The goal of this project is to provide a reliable water supply for Round Valley School incorporating simplicity and redundancy within the proposed design. In addition this project will also provide more adequate water for structural fire protection by providing access to an irrigation ditch on the neighboring property.

Currently there is only one well with a significant deficiency. In the past few years the school has experienced numerous outages, 3 outages in the last 2 years. With each outage, school must either be dismissed or drinking water and portable bathrooms must be ordered and brought in. There is also an increase potential for bacterial contamination. A more reliable system will minimize these potential conditions. In addition the new system would not interrupt student learning and help protect the schools instructional investment.


### Completed Work

A conceptual design has been developed for this project, and contact with the neighboring property owner has been initiated to acquire water for fire protection.

### Project Map

See Figures 4 and 5.

### Project Timing and Phasing

The project is planned to start construction in mid June, after school is out and is planned to be completed by September 1st, 2011. To complete this work within these timeframes, preconstruction work will be funded with non-grant moneys.

## Tasks

### *Budget Category (a): Direct Project Administration Costs*

Direct project administration will be handled by the superintendent of the distinct and the Project Manager at a total cost of $7800

### *Budget Category (b): Land Purchase/Easement*

Land purchase / easements cost $0. Land owner will not charge for an easement to utilize his land.

### *Budget Category (c): Planning/Design/Engineering/Environmental Documentation*

The task of developing a design package, obtaining permits and going through the bidding process will cost a total of $8300.

### Budget Category (d): Construction/Implementation

Construction implementation of Water system will consist primarily of:

- Site preparation: Minor amounts of site preparation work will be needed and will be the responsibility of the contractor.

- Well drilling and development: These tasks are straightforward for the drilling industry. It is estimated that the well bore will be 10 or 12 inches and use 6" PVC casing, pitiless adapter and 50-foot sanitary seal. The water table in the area to be drilled is estimated at 25 feet, and anticipated finish well depth should be approximately 100 feet.

- Construction of well appurtenances and supply lines, storage tank, booster pumps, and electrical components: All construction is anticipated to be located within 50 feet of the existing well and pump house. A storage tank of approximately of one day supply will be installed with associated waterlines leading to and form it. Two booster pumps will be installed in the existing well house, one powered by commercial power, one powered by a gas engine.

- In addition to the domestic water supply, a nearby irrigation ditch will be altered, access provided and a short section of permanent draft pipe will be installed to provide for faster / more reliable response during fire emergency.

- System tests and sampling: required performance testing and water sampling will be performed by Project Manager or licensed geologist as required.

- Amendment of the District's Water System Permit: the Project Manager will complete the appropriate paperwork to amend the existing the water system permits with Inyo County.

CONSTRUCTION
Cost: $77,000

**Budget Category (e): Environmental Compliance/Mitigation/Enhancement**

NA **Cost: $0**

**Budget Category (f): Construction Administration**

Direct project administration will be handled by the superintendent of the distinct and the Project Manager at a total cost of $4800.

**Budget Category (g): Contractual Services**

Contractual services to ensure project compliance, coordination and integration with other projects and the overall Inyo-Mono IRWM Plan implementation. $2,200

**Budget Category (i) Construction / Implementation Contingency**

A contingency factor of approximately 10% ($11,000) of the cost of the project has been applied. This allows coverage for potential overages and factors as described in the work plan.

**Figure 4.** Project map for Round Valley Elementary School water supply reliability enhancement project.

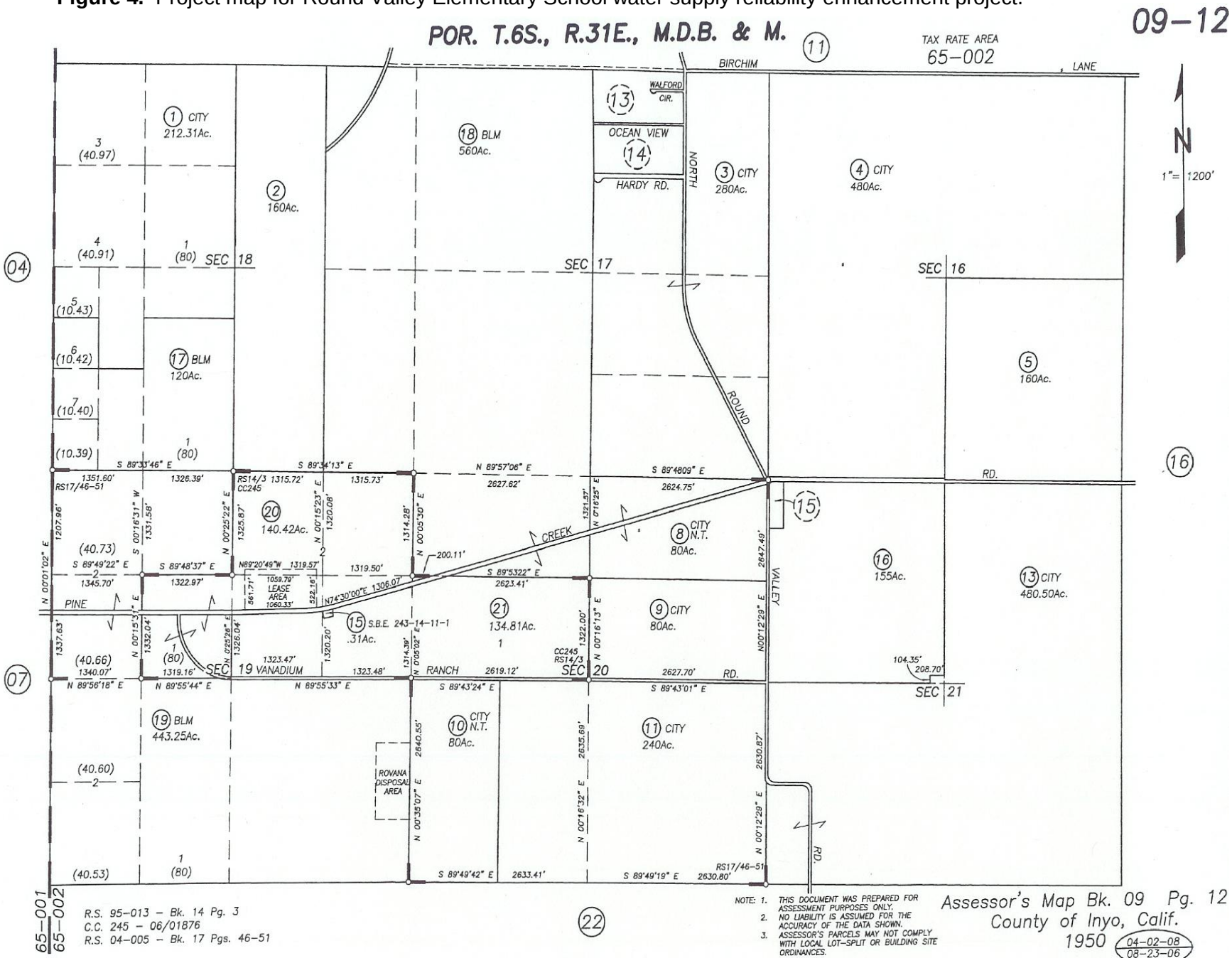
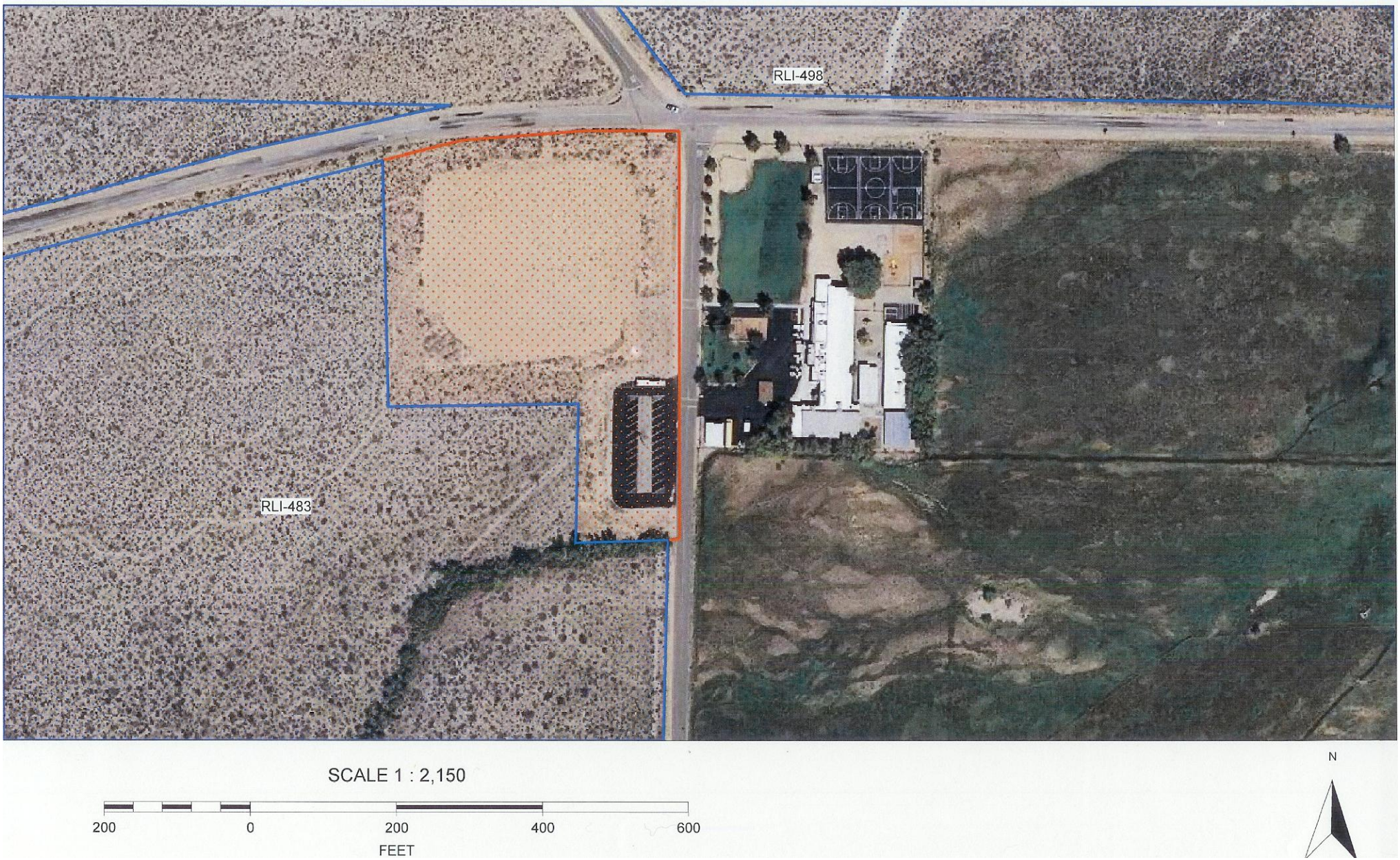


**Figure 5.** Project map for Round Valley Elementary School water supply reliability enhancement project.



## Project #4: New Hilltop Well

## Project Proponent: Wheeler Crest Community Services District

### Abstract

The scope of work for the new well project in the Hilltop area of Swall Meadows is to drill a groundwater well within the project area to provide a new source of water for residents, and to augment the exiting artesian well that is very remotely located and has become erratic in its reliability.

Since the Wheeler Crest CSD is an all-volunteer organization, all work of the project itself will be contracted out; and a board member will be selected to administer the project and act as coordinator of the project elements. The Board has experience in project development and monitoring, and has members with backgrounds in engineering and general contracting. The tasks below are arranged to supplement the tasks defined in the Budget, Attachment 4, and Schedule, Attachment 5, presented in later sections herein. The work plan and associated tasks have been defined to both recognize the scope of the job and the anticipated typical use of contractors in the area that will assure successful completion of the project. Another consideration in the plan is the location of the project which is on the slope of the Eastern Sierra at an elevation of 6480 feet and the typical variability of the weather at the site during the winter months.

The goal of this project is to drill a groundwater well and install a small reservoir/pressure system within the Hilltop community proper. The existing artesian well and the system reservoir are located approximately 2500 and 1000 feet respectively from the community. The objective is to establish a new system to augment the single-source artesian well, eliminating the dependence upon such a long supply line, thus greatly increasing water-supply reliability. A new, safe and more reliable water supply will be available to customers. Chances for bacterial contamination will be substantially reduced. Disinfectant insertion to, and monitoring of, the system will be substantially improved.

The existing Hilltop water system was installed in 1955 to service the first residents of the original Swall Meadows community. The system is now 55 years old and consists of an artesian well, a small underground reservoir, and approximately a mile of 1-1/4 inch plastic distribution lines. The system has no redundancy or back-up and can be shut down by any single-point failure. The sections of plastic line are interconnected by barbed fittings and radiator clamps. The aging system is prone to distribution leaks and pathogenic failures. This year the artesian well had a failure resulting in total loss of water to the community, with a subsequent bacterial contamination in the distribution system and emergency water having to be supplied under a boil order. The potable water supply was out for two weeks. Chlorinated, but non-drinkable, water was provided for sanitation purposes by filing the reservoir from the fire department water tender. The current system is beyond reasonable life expectancy and is subject to the vagaries of the artesian supply. The inherent flow of the well is extremely low and is dependent upon a siphon principle to produce. As shown with the artesian well outage this summer, the system's integrity is easily compromised by a simple plumbing leak.

### Completed Work

Several items requisite to this project have been completed, including an engineering study of water system requirements and a preliminary engineering design of the project proposed herein that includes preliminary budgetary costing. These two documents have been included as attachments to this application. Future engineering design will be limited to preparation of final drawings and specifications. The project will be sited on a private parcel for which agreement has been reached with the landowner for an easement. This easement will be finalized prior to grant go-ahead. Likewise, a preliminary design has been initiated with Southern California Edison for provision of electrical power, and a final drawing for furnishing power to the site is anticipated in early 2011. It has been estimated by the appropriate public agency that any CEQA requirements will be completed prior to any grant release. Requirements for the well project have also been reviewed with the Mono County Health Department.

### Existing Data and Studies

The engineering study and preliminary engineering design referenced in the above section are included as supporting documentation to this project. These documents are provided in hardcopy only as there is no electronic version available.

### Project Map

See Figures 6 and 7.

### Project Phasing and Timing

Phases of the project will include drilling the new well, bringing in electrical power, and construction of a tank and pressure system to connect with the existing distribution network. The proposed project will be ready for final design, the bid process, and consideration of potential contractors at the onset of the program.

## Tasks

### Direct Project Administration

General project administration will be handled by a board member of the Wheeler Crest CSD. The primary task will be overview of the project's progress. Quarterly reports will be issued to fulfill grant requirements, and significant milestones and objectives will be tracked to assure proper monitoring and assessment of project goals.

### Planning Design/Engineering Documentation

In order for this project to begin at the onset of any grant release, several preparatory tasks will be completed during the early months of 2001:

- Coordination with, and supply of information to, Southern California Edison for its preparation of an engineering package for provision of electrical power to the site.

- Coordination with the applicable governing agency within Mono County to obtain a CEQA determination for the project.

- Conclude the process of finalizing an easement for the project site.

Upon go-ahead, the detail design will continue based on the preliminary design already completed. The design tasks to be accomplished during this phase are:

- Development of a bid package,

- Completion of detail drawings of the well construction and pressure/valving system

- Final selection and specification of appurtenance hardware

- Obtain a well permit from Mono county

Preliminary bid package requirements have also been defined and the bid package will be completed when final drawings and specifications have been generated. Working with a member of the Board, final detail drawings will be prepared by a local engineering firm that has previously completed both the existing engineering study and the preliminary system design. This drawing package will become the as-advertised plans and specifications. The engineering firm will also coordinate selection and specifications for all hardware required to select the water pressure tank, pump, delivery valving, and electrical control. Once a well contractor has been selected, the selected contractor will obtain a well permit from the Mono County.

**Construction/Implementation**

This phase of the project will also be directly overseen by a member of the board experienced in construction projects. Water system construction will consist primarily of:

- Bid processes for a well contractor and a general construction contractor

- Site preparation

- Well drilling and development

- Construction of well appurtenances and supply lines

- System tests and sampling

- Amendment of the District's Water System Permit

Bid Process - Bids will be required for a well drilling contractor and a general contractor. There are a couple of well drilling contractors in the local area and these are the most likely candidates as other drilling contractors are located at least 150 miles away. Local per diems for an out-of-area drilling crew plus the costs of traveling for several visits to the area lessen the chance for an outside bid. The general contractor will be

responsible for interconnection of the new well to the existing distribution system, including all appurtenances. The District board will be responsible for contractor bidding, evaluation and selection. The District places bid solicitations with the local newspapers in both Bishop and Mammoth Lakes. Bids will be reviewed by the entire Board and a selection awarded.

Site Preparation - There will be some site work necessary to gain entry access to the site as it is below road level, and to accommodate the well drilling rig and also the tank and vault which must be buried. Trenching must be done for underground installation of electrical conduit for power from a remote location.

Well Drilling and Development – These tasks are straightforward for the drilling industry. It is estimated that the well bore will be 6 or 8 inches with PVC casing, pitless adapter and 50-foot sanitary seal. The water table of wells in the vicinity is from 50 to 100 feet deep depending upon the terrain gradient and substructure, and anticipated finish well depth should be approximately 150 to 200 feet. Numerous wells exist both upslope and down slope of the proposed new well site, thus success at the site is expected. The well itself will be one of three construction modules, the other two being a buried reservoir and a buried appurtenance vault for the pressure system. All modules will have a low visual profile in consideration of neighbor views.

Construction of Appurtenances and Supply Lines - The general contractor will be responsible for burying the reservoir and the appurtenance vault designed for installation of valving, a pressure pump, system valving, and electrical power and controls. The general contractor will also interface with the existing distribution system and the primary power source from SCE. The construction task includes procurement of the major system components such as the reservoir, equipment vault, pump, pressure system components, valving and both power and control electrical devices.

System tests and sampling - Performance testing of the system in its various modes will be performed by the WCCSD in conjunction with the contractors to assure that all system parameters and controls are operating correctly. Water samples will be drawn and sent to an environmental testing laboratory for analysis of general minerals, inorganic chemicals, VOCs, radium 226/228 and alpha/uranium. Water samples will also be sent to the Mammoth Community Water District for Coliform/pathogen testing as is currently the monthly procedure for the existing artesian well system.

Amendment of the District's Water System Permit – At the conclusion of construction, testing and sampling, the District will amend its Water System Permit with the State.

**Construction Administration**

Administration of the construction phase will be accomplished using Board volunteers to coordinate various contractor interfaces, to assure attainment of key milestones and adherence to drawing requirements, and to monitor project progress.

**Construction/Implementation Contingency**

The drilling and basic construction tasks defined above assume reasonable construction situations, and contingency efforts have been estimated to consider such additional efforts required due to:

- The well may have to be drilled deeper than the 200 feet anticipated.
- Problems which may occur in drilling in rock at this particular site,
- Excavation costs which might escalate due to large rock formations that are not readily apparent at ground level,
- Contractor scheduling that may require expediting to meet program schedules,
- Unusually severe or lengthy weather or storms that cause delays or extra effort to protect work in progress, or to remove snow to continue work.

**Figure 6.** Project map for New Hilltop Well project

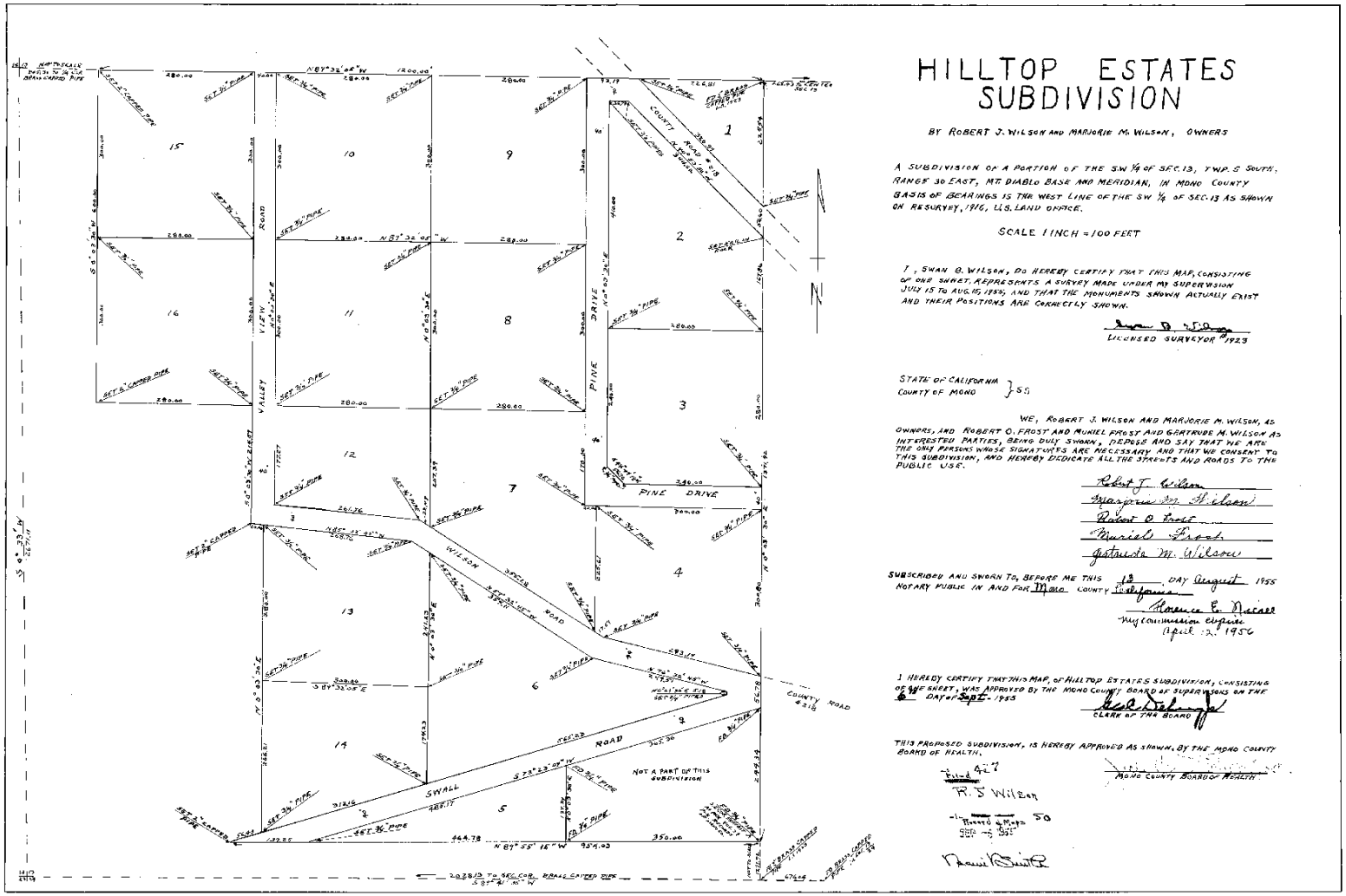
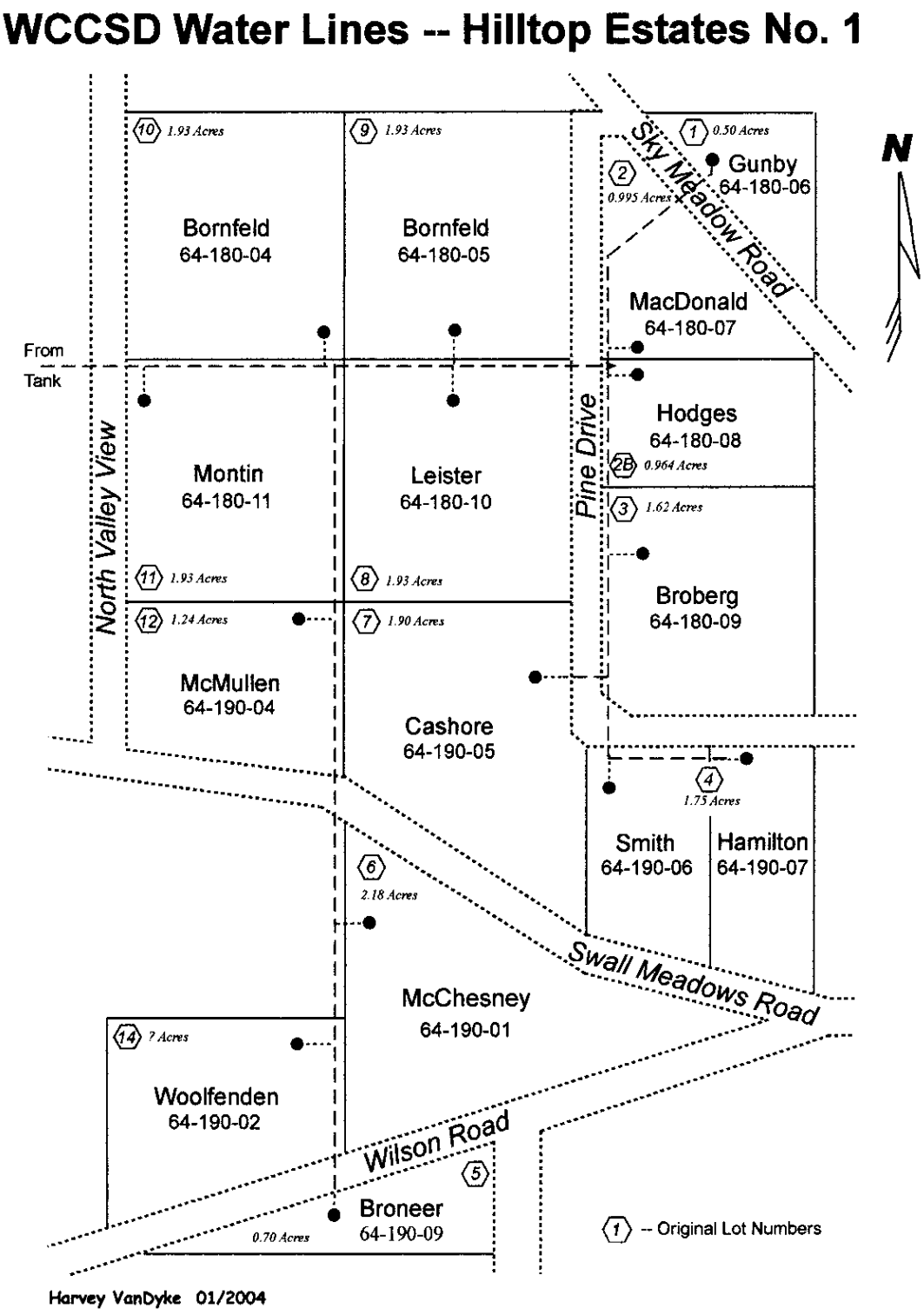


**Figure 7.** Project map for New Hilltop well project



## Project #5: Well Rehabilitation – Phase I

## Project Proponent: Mammoth Community Water District


**Abstract**

The District uses both surface and groundwater to meet the community water supply needs. Surface water supply is limited by natural snow pack variability, storage capacity of Lake Mary, and fishery bypass flow criteria incorporated in the District's water rights permit and licenses. Groundwater supply is limited by the yield of production wells, and by naturally occurring contaminants. Arsenic, iron, and manganese are present at levels exceeding federal and state maximum contaminate levels (MCL). In 2006, the Federal MCL for arsenic was reduced from 50 ppb to 10 ppb. As a result, the District violated the arsenic MCLs in early 2009. The groundwater also contains constituents such as phosphorous that inhibit effective removal of contaminants. Naturally occurring iron bacteria can plug the well screens and reduce yield over time. Because the District relies on groundwater for up to 75% of its supply during drought conditions, the reduction in groundwater supply due to inability to treat to standards and reduced yields has a significant negative impact on overall water supply reliability.

Currently Well #17 exceeds the MCL criteria for Arsenic. The groundwater treatment techniques used by the District are not capable of treating the well below the MCL. If the District is successful in isolating and removing the arsenic contributing portion of the well then the well can be used as a source of potable water with existing treatment technologies.

Well #25 was designed to pump directly into the water distribution system with only wellhead disinfection. Currently the well exceeds the iron and manganese MCL's. If the District can isolate and remove the source of contamination the well can be discharged directly into the distribution system and avoid the cost of piping to a groundwater treatment plant.

The District would like to determine whether isolating specific aquifer levels within key wells will reduce the contaminant level inputs from those geologic layers, while maintaining overall yield from the well. This will be done through vertical water quality and transmissivity testing, identification of primary contaminant sources within the aquifer levels, and blanking off the screen sections in these areas. If successful on the first two wells, the work would be continued to other wells in Phase 2.

The District will work with its hydrogeologist and the testing vendor to complete the well profiling. The two wells to be profiled collect water from multiple aquifer layers with different water qualities. The amount of water produced in the different layers is also variable and can be influenced by the transmissivity of the aquifer layers, pumping rates, depth of the pump intake and the condition of the perforations in the well. The results of the well profiling will confirm whether the water quality can be improved by sealing off sections that contribute the highest contaminant loading. The testing will also verify the most efficient pumping rate to minimize contaminant loading. Both wells have variable frequency drive motors (VFD's). The appropriate well sections will then be blanked off and the pumping rates adjusted as needed to minimize contaminant loading while optimizing the well yield.

The vendor and hydrogeologist used to conduct the well profiling and pump testing will provide a report on the results of the study. The ultimate deliverable will be installation of the blank screen sections and modified pump VFD settings.

District customers will benefit from improved water quality. Well improvements will benefit ratepayers by minimizing the need to construct new water treatment facilities to remove contaminants. This project will benefit other water providers by providing an opportunity to use the District's study as a case study for their systems. If well profiling is successful in determining where the contaminants are coming from and those sections are sealed off to reduce the contaminate loading, then other wells and water purveyors within the IRWMP could benefit from this technology as well.

**Completed Work**

After completion of Well 25 the well sat idle for several years. Original water samples indicated that all contaminant levels were below MCL's, therefore the pumping system was designed to discharge directly into the distribution system. Once the pump house for the well was completed and brought online, water quality had changed in the well and iron and manganese levels exceeded the MCL's and the presence of iron bacteria were detected. The District hired a consultant that provided a recommended well treatment procedure that included both physical and chemical rehabilitation techniques. After treating the well, the water quality was not improved substantially and iron and manganese levels still exceeded the MCL's.

Included are the water quality reports from the Water Systems Engineering regarding treatment of Well #25:

- Well 25 previous study 1
- Well 25 previous study 2

An arsenic removal pilot study for well number 17 was completed in the fall of 2009 by Pureflow. The report showed that the existing treatment technologies available at the District Groundwater Treatment Plant #2 were not capable of reducing arsenic levels below the MCL. In order to reduce the arsenic level below the MCL, expensive improvements such as polishing filters would be required at the groundwater treatment plant.

The pilot study report is included: MCWD Well 17 pilot study

**Existing Data and Studies**

See the previous section for a discussion of existing data and studies and a list of supporting documents that are included in support of this project.

**Project Map**

See Figure 8.

**Project Timing and Phasing**

The project would start during the summer of June of 2011. The RFP and environmental documentation would occur in June and July. The actual well profiling study will occur in August through October. The final reports and other documentation will be completed by the end of February 2012. Please see attached schedule.

## Tasks

### Task 1: Administration

Oversight and administration of grant proposal and implementation. District employees will review project progress and make sure that the project objectives and goals are met.

Deliverables: Preparation of invoices and other deliverables as required

### Task 2: Environmental Documentation

Completion of Notice of Exemption for CEQA process. The District believes that this project is exempt from CEQA and will therefore prepare and issue a Notice of Exemption. The District intends to file a Notice of Exemption with the State Clearinghouse for the project. The Statutory Exemption can be found under Article 18. Statutory Exemptions, Section 15262, Feasibility and Planning Studies. It states:

> A project involving only feasibility or planning studies for possible future actions which the agency, board, or commission has not approved, adopted, or funded does not require the preparation of an EIR or Negative Declaration but does require consideration of environmental factors. This section does not apply to the adoption of a plan that will have a legally binding effect on later activities.

The Notice of Exemption would be filed following Board approval of the contract.

Deliverable: Approved and adopted CEQA Notice of Exemption

### Task 3: RFP and Contracting

District staff will prepare and issue an RFP for the proposed project. The RFP will be advertised and the proposals evaluated once they have been received. District staff will then submit recommendations to the Board of Directors for approval of a contract with the chosen proponent.

Deliverables: Advertisement of RFP, evaluation of proposals, award of contract

### Task 4: Construction/Implementation

Vertical well profiling will include two components:

1 - Dynamic Flow and Chemical Profiling under current pumping conditions. This will include using miniaturized tools to conduct flow and chemical profiling without removing

the existing pump and motor. Flow and chemical measurements will be made at incremental depths throughout the well column in order to obtain information on how much water is produced at various depths and the chemical makeup of the water as well.

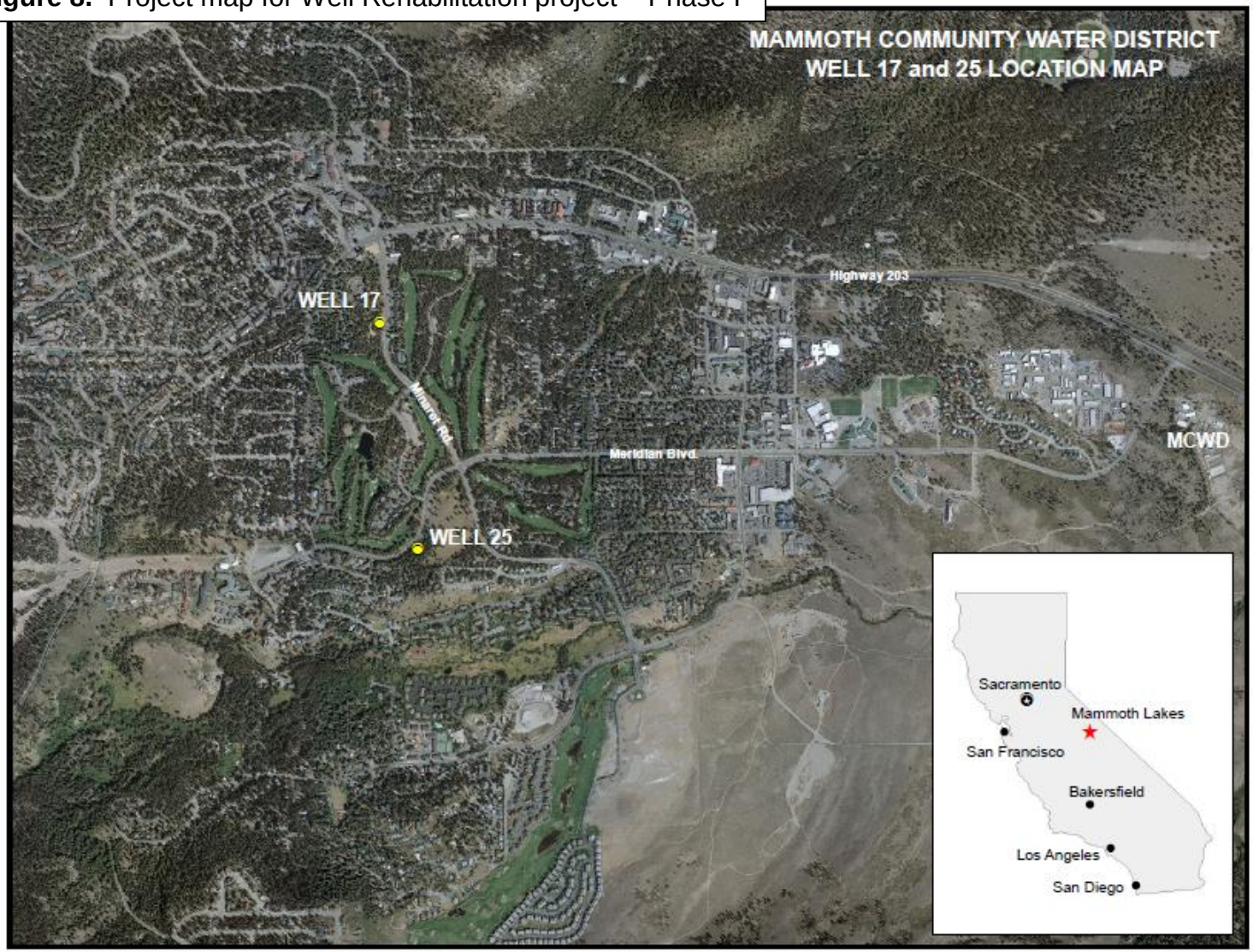
2 – Production of a report detailing the findings of the vertical well profiling and discussion of options available to reduce the contaminate loading. Using the data gathered from the vertical well profiling, the contractor will prepare a detailed report indicating aquifer and flow conditions during normal pumping parameters. The report will include detailed recommendations on the feasibility of reducing the contaminant loading from the wells with minimal reduction of the production of the wells.

Deliverable: Final report detailing findings and recommendations.

**Task 5: Construction Administration**

District staff will oversee and monitor project progress and ensure that the contract requirements are met.

**Figure 8.** Project map for Well Rehabilitation project – Phase I



## Project #6: Pump Operation Redundancy and SCADA Improvements

## Project Proponent: Inyo County Department of Public Works


**Abstract**

The goals of this project are to increase the overall reliability of the water systems' ability to start the pumps when necessary, provide redundancy to operator notification in the event of an emergency, increase the variables monitored by the SCADA system, install a communications line to increase the variables monitored, and to achieve a degree of energy savings and efficiency by shifting the pump-on times to the lo peak or base peak periods from the hi peak period. This project will install secondary pressure sensor switches on each water system as a back up to energize and operate the well pumps and maintain system pressure in case of transducer or SCADA system failures. Secondary Auto-dialers are also included for operator notification redundancy. The project also will upgrade the SCADA systems to include capability to program off-peak pumping capability to save energy.

The purpose of this project is to increase the overall system reliability to provide water to the communities. The need is to eliminate as much as is practical the current malfunctioning of pump starts and SCADA autodialer malfunctions we experience sometimes frequently. Inyo County owns and operates three community water systems serving the unincorporated towns of Laws, Independence and Lone Pine. The combined population served by the water systems is approximately 2,000 people. The Lone Pine and Independence water systems are supplied by water from a well and gravity head storage tanks. A well and hydropneumatic storage tank supplies the Laws community water system. Transducers located at the tanks send high /low signals to the Supervisory Control And Data Acquisition System SCADA system to operate the pumps. *Currently, there is no redundancy to activate the pumps should the transducers or SCADA system fail*. Laws, Independence and Lone Pine are Disadvantaged Communities. Ratepayer revenues for Independence and Lone Pine cover Operations & Maintenance (O&M) but are insufficient to build capital reserves for upgrades. The County has had limited success raising the water rates. The Laws water system supplies water for only 14 ratepayers. Monthly revenues are too small to operate the system in the black. Inyo County subsidizes the system operation and maintenance costs.

This project addresses the following adopted Inyo-Mono IRWMP goals and objectives (in parenthesis): 1A, 1B, 1C, 1F, 4A, 4B, 4C, 5A, 5B, 5C, 6A, 6B

1. Protect, conserve, optimize, and/or augment water supply:

1A: Improves system reliability with redundant pump start controls and alarm autodiallers; and by providing additional SCADA monitoring in the community of Laws. (Improve water supply reliability).

1B: Improves flexibility and efficiency with redundant pump starting, autodialer, and off-peak pumping. (Improve system flexibility and/or efficiency).

1C: Supports compliance with state regulations by recording the maximum day demand and the maximum flow. (Support compliance with current and future state and/or federal water supply standards).

1F: Off-Peak Pumping at night optimizes existing storage capacity over a 24-hour period. (Optimize existing storage capacity).

4. Maintain and enhance water, wastewater, and/or power generation infrastructure efficiency and reliability:

4A: Systematically and strategically rehabilitating aging delivery facilities by adding redundancy to the pump start controls. (Systematically and strategically rehabilitate and replace aging water… facilities in rural communities…).

4B: Ensures fire protection with redundant pump start controls and more water in storage over a 24 hour period. (Ensures fire protection capacity).

4C: Improves energy efficiency of water systems with off-peak pumping. (Improve energy efficiency of water systems and uses).

5. Address Climate Variability and/or reduce greenhouse gas emissions:

5A: Increases awareness of water related greenhouse gas emissions by off-peak pumping. (increase understanding of water related greenhouse gas emissions).

5B: Manage and modifies water systems to respond to climate variability with off-peak pumping. (Manage and modify water systems to respond to increasing climate variability).

5C: Move and treat water elsewhere using local hydroelectric power which is made available by Off Peak Pumping practiced locally during the peak power consumption time of the day. (Use cleaner energy sources to move and treat water).

6. Increase participation of small and disadvantaged communities in IRWM process:

6A: Engages Laws, Independence and Lone Pine in collaborative effort to improve reliability. (engage regional communities in collaborative water and natural resource related efforts).

6B: Provides assistance to the disadvantaged communities of Laws, Independence and Lone Pine for access to funding for water systems projects. (Provide assistance for tribal and DAC consultation, collaboration, and access to funding for water programs and projects.

**Completed Work**

No work has been performed at any level for this project yet.

**Existing Data and Studies**

The data collected to date are experiential, i.e. we know the difficulties we have experienced in the ten-year past. The project is feasible, being standard means employed by other water utilities. The technical methods of pump start / stop with pressure switches and operator notification by auto-dialers is standard for the industry.

**Project Map**

See Figure 9.

**Project Timing and Phasing**

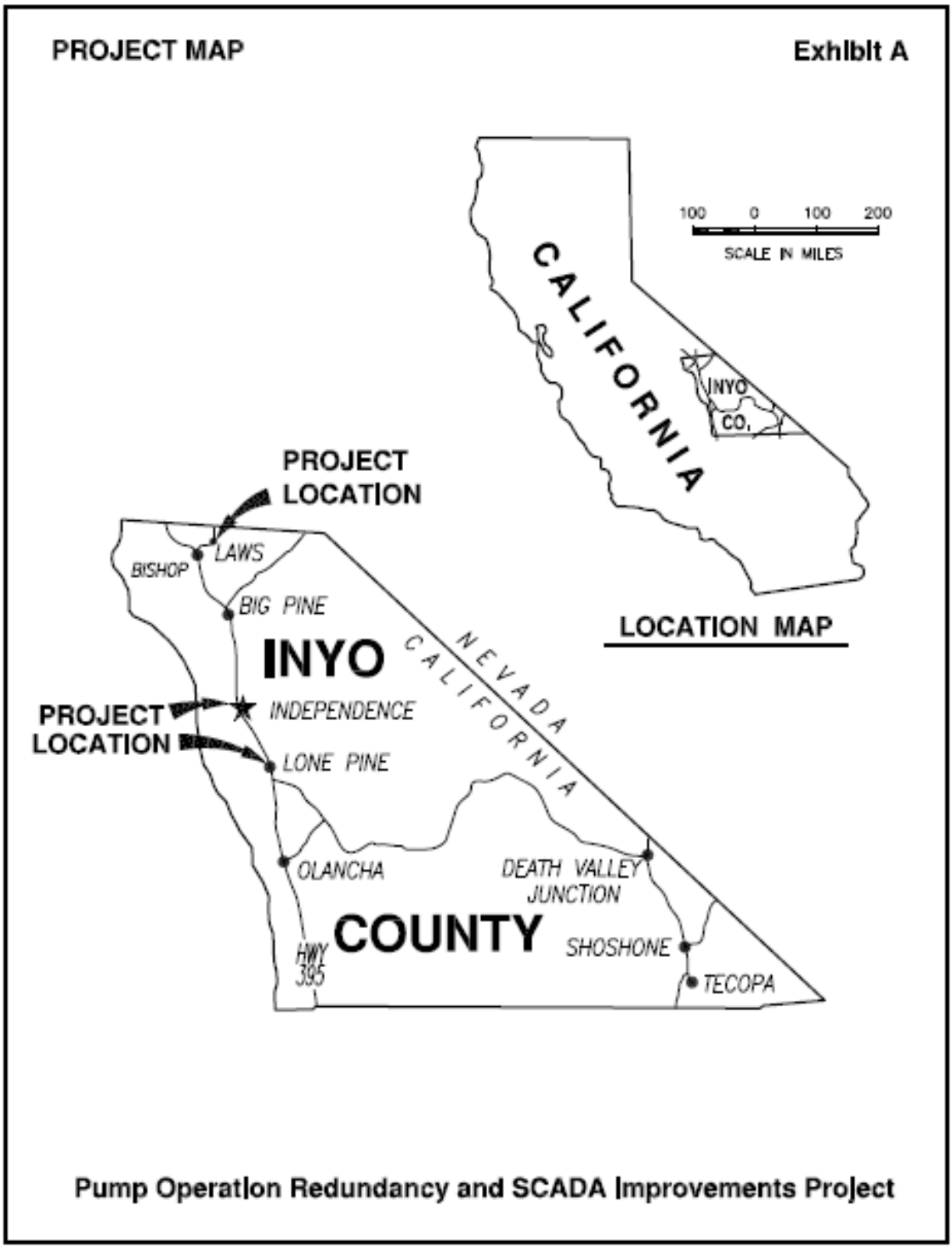
This project is not a phase of construction of any other project. If more than one Inyo County Public Works project is awarded funding, this project will be completed first with the other project(s) completed sequentially.

## Tasks

| Budget Category (a): Direct Project Administration Costs | |
|---|---|
| **Task 1: Administration** | **Description of Work** |
| | Coordinate the project and construction process. Document the entire process prepare and submit appropriate reports as needed |
| | Deliverables: Preparation of invoices and other deliverables as required. |
| **Task 2: Labor Compliance Program** | |
| | All work will be in compliance with the Davis Bacon requirement for a prevailing wage contract. Submit certified payroll or other documentation required by the Grant. |
| | Deliverable: Submission of Labor Compliance Program |
| **Task 3: Reporting** | |
| | Prepare and submit reports pertaining to the achievement of the tasks or goals identified in the project. |
| | Deliverables: Submission of reports as specified in the Grant Agreement. |
| Budget Category (b): Land Purchase/Easement | |
| | No land or easements required |
| Budget Category (c): Planning/Design/Engineering/Environmental Documentation | |
| **Task 4: Assessment and Evaluation** | |
| | NA No technical studies or evaluations will be required for |

| | |
|---|---|
| | this project. |
| **Task 5: Final Design** | |
| | Prepare Plans, specifications and contract documents |
| | Deliverables: Completion of project plans and specifications at the 90 percent and final level. |
| **Task 6: Environmental Documentation** | |
| | Submit notice of CEQA Categorical Exemption for project |
| | Deliverable: Approved and adopted CEQA documentation |
| **Task 7: Permitting** | |
| | None required |
| Budget Category (d): Construction/Implementation | |
| **Task 8: Construction Contracting** | |
| | Advertise project, open bids, enter into contract with lowest responsive bidder, administer contract, perform construction inspection, process pay requests. |
| | Deliverables: Advertisement for bids; prebid contractors meeting; evaluation of bids; award contract |
| **Task 9: Construction** | |
| | Install pressure switches, transducers and autodialers, run communications line, reprogram SCADA system |
| *Subtask 9.1 Mobilization and Site Preparation* | |
| | Minimal mobilization needed, if any |
| *Subtask 9.2 Project Construction* | |
| | Install pressure switches, transducers and autodialers, run communications line, reprogram SCADA system |
| *Subtask 9.3 Performance Testing and Demobilization* | |
| | Run extensive scenarios to verify that Off Peak Pumping SCADA program will not negatively impact any well's ability to turn on at any hour of the day regardless of off peak conditions or not. Troubleshoot SCADA program. |
| Budget Category (e): Environmental Compliance/Mitigation/Enhancement | |
| **Task 10: Environmental Compliance/Mitigation/Enhancement** | |
| | None Required |
| Budget Category (f): Construction Administration | |
| **Task 11: Construction Administration** | |
| | Complete project closeout and documentation. Submit reports as required to IWRMP, Cal DWR and the County |

**Figure 9.** Project Map for Pump Operation Redundancy and SCADA Improvements



## Project #7: CSA-2 Sewer Upgrade Project

## Project Proponent: Inyo County Department of Public Works


**Abstract**

The proposed project is located in Aspendell, served by County Service Area #2 (CSA-2), west of Bishop, bordering Inyo National Forest and USFS campgrounds. The County manages the sewer collection system on behalf of the Aspendell residents. The proposed project will replace approximately 3,000 ft. of existing sewer main.


**Project Background, problem statement:**

The sewer system was installed in the late 1960's and consisted of a gravity sewer collector that discharged to a communal septic tank, force main and leachfield. By the early 1970's the system began to exhibit various problems. In the mid 1970's an engineering study found that the leach field was poorly designed and the collector system had problems related to poor construction, hydraulics and inflow and infiltration (I&I).

In 1977 the USFS was ordered by the RWQCB to remove pit toilets located in nearby campgrounds to eliminate impacts to the water quality. In 1978 the USFS constructed a treatment facility to serve the campgrounds. At that time, CSA-2 abandoned the community septic and leach field system and connected the existing sewer collection system to the USFS system.

The sewer collection system is now more than 40 years old, near the end of its useful life. Several hundred feet of the main need replacement due to reoccurring blockages and continuing I&I. Blockages occur from inconsistency of pipe diameters, uneven grade and root intrusion, and have resulted in overflow and spillage.

Bishop Creek is downgrade from the sewer system, and runoff from a spill has the potential to contaminate the creek. Seeping mains also may affect ground water in wetland area near the creek and likely produce non-point source pollution.

I&I are increasing as the system degrades, and is impacting the treatment plant and increasing energy costs for treatment and reducing plant capacity, thereby resulting in rising costs charged to CSA-2. The USFS has complained about flow generated by the CSA-2 system.

The purpose of the project is to replace the existing leaking and seeping sewer mains and to prevent spillage.

The replacement is needed to reduce operational costs to the CSA residents, the US Forest Service operated plant and to reduce greenhouse gas emissions. The proposed upgrades will also serve to protect the water quality in the surrounding wetlands and Bishop Creek by reducing the potential for raw sewage spillage and seepage.

Replacement of sewer main and lateral connections is a straightforward process. The County will utilize in-house engineering staff to develop plans and specifications or contract for engineering if staff is unable to prepare the documents.

The County intends to replace mains that have documented root intrusion or I&I first and then replace other portions of the system. Phase 1 will include approximately 3,000 feet of 6" mains, and manholes.

The project will require permitting by RWQCB, Caltrans Encroachment Permitting, County Road Encroachment Permitting, Fish and Game permitting, Army Corp of Engineers and improvement plan review by the Inyo County Public Works Department. Permitting requirements have not been met.

**Completed Work**

No work has been performed at any level for this project yet.

**Project Map**

See Figure 10.

**Project Timing and Phasing**

An estimated 10 months for plan development, 1 to 1-1/2 years for environmental document preparation and permitting, and approximately 4 months for construction.

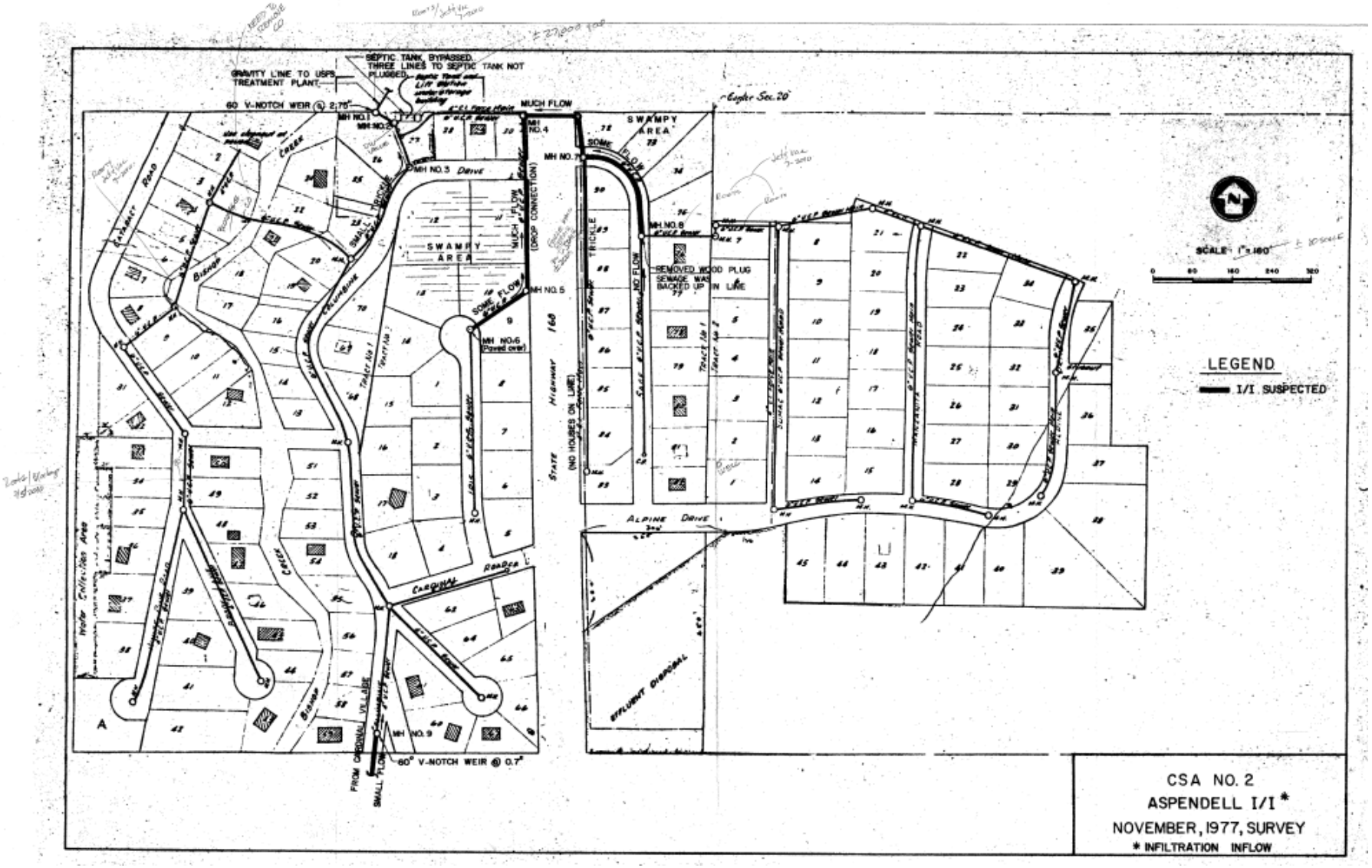
## Tasks

| Budget Category (a): Direct Project Administration Costs | |
|---|---|
| **Task 1: Administration** | **Description of Work** |
| | Coordinate the project, including the environmental, permit and construction process. Document the entire process prepare and submit appropriate reports as needed |
| | Deliverables: Preparation of invoices and other deliverables as required. |
| **Task 2: Labor Compliance Program** | |
| | All work will be in compliance with the Davis Bacon requirement for a prevailing wage contract. Submit certified payroll or other documentation required by the Grant. |
| | Deliverable: Submission of Labor Compliance Program |
| **Task 3: Reporting** | |
| | Prepare and submit reports pertaining to the environmental, design, permitting, construction process and close out of the Grant and any other related documentation |

| | |
|---|---|
| | Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement. |
| Budget Category (b): Land Purchase/Easement | |
| | Acquisition of several construction and sewerline easements for permission to cross property that has not previously been secured by easements. |
| Budget Category (c): Planning/Design/Engineering/Environmental Documentation | |
| **Task 4: Assessment and Evaluation** | |
| | NA No technical studies or evaluations will be required for this project. |
| **Task 5: Final Design** | |
| | Secure a contract with a consulting engineer for the preparation of Plans and Specifications for the sewerline construction |
| | Deliverables: Completion of project plans and specifications at the 90 percent and final level. |
| **Task 6: Environmental Documentation** | |
| | Secure a contract with a environmental consultant for the preparation and submission of documents (NEPA and CEQA) to identify mitigation measures for construction of the sewerline |
| | Deliverable: Approved and adopted CEQA/NEPA documentation |
| **Task 7: Permitting** | |
| | Obtain F&G, Caltrans, Inyo County Road Department, Regional Board and other permits for construction of the sewerline |
| | Deliverables: Section 1602, 404, 402, NPDES, etc. |
| Budget Category (d): Construction/Implementation | |
| **Task 8: Construction Contracting** | |
| | Prepare plan and bid documents with the assistance of a consulting engineer for construction of the sewerline |
| | Deliverables: Advertisement for bids; prebid contractors meeting; evaluation of bids; award contract |
| **Task 9: Construction** | |
| | Construct project per plans and specifications for the project |
| *Subtask 9.1 Mobilization and Site Preparation* | |
| | Contractor to mobilize and prepare for construction of the sewerline. |
| *Subtask 9.2 Project Construction* | |
| | Install approximately 3,000 feet of 6" sewerline and related structures |

| | |
|---|---|
| *Subtask 9.3 Performance Testing and Demobilization* | |
| | Pressure test and mandrel the sewerline. Document the location of the as built sewerline. Clean up site and complete all work identified in the plans and specifications. Demob equipment. |
| Budget Category (e): Environmental Compliance/Mitigation/Enhancement | |
| **Task 10: Environmental Compliance/Mitigation/Enhancement** | |
| | Construct or complete tasks that were identified in the NEPA/CEQA for mitigation of construction impacts. |
| Budget Category (f): Construction Administration | |
| **Task 11: Construction Administration** | |
| | Complete project closeout and documentation. Submit reports as required to IWRMP, Cal DWR and the County |

**Figure 10.** Project map for CSA-2 Sewer Upgrade Project



## Project #8: Secondary Water Tank – Birchim Community Services District

## Project Proponent: Birchim Community Services District

### Abstract

The Birchim Community Services District, BCSD, constructed a water tank in 1989 to provide fire flow and reduce cycling of well pumps used for water supply in the District. The tank, a bolted steel tank, was installed without epoxy coated bolts to protect against corrosion. BCSD found after the tank was installed that the water from the wells was highly acidic resulting in significant corrosion of the bolts in the tank. The tank is the only tank within the district and taking it off line to remove existing bolts and install new epoxy coated bolts would expose the BCSD users to a significant fire risk due to loss of storage and create significant wear on the well pumps due to increased cycling of the pumps during supply of daily domestic water use.

The installation of a 45,000 gallon secondary tank will provide needed water storage for fire and domestic use while the existing tank bolts are replaced. The tank will be located adjacent to the existing BCSD tank to reduce piping costs to supply the new tank and also locate the tank in an area within the current U.S. Forest Service use permit area for the existing tank. In addition the new tank will be constructed at the same elevation and have the same height of the existing tank. This will allow for identical tank level operation when both tanks are in service reducing eliminating the need to modify the existing well pump control system.

### Tasks

Administration: The project will cost the BCSD approximately $25,000 which the BCSD presently has in their replacement fund. Approval to spend the money only requires a majority vote of the Board of Directors. A meeting of the Board will be held to approve the Non-State Share of the funding for the project. In addition administration will include the preparation of invoices for payment by the DWR. Since the project funding will not come until late in the environmental and engineering design the initial invoice will cover a large portion of engineering and environmental consulting costs. Invoicing will also occur twice during construction as the project construction will only take two months. The other deliverables will include the amendment to the U.S. Forest Service Lease and acceptance of construction bid.

Labor Compliance Program: BCSD will include a labor compliance program to the bidders for the project. Submittal of the bidders labor compliance program will be sent to the DWR.

Reporting: Submittal of progress reports will be completed at the following stages: CEQA negative declaration adoption, approved civil design package, and an intermediate and final construction progress report that will include the onsite inspection reports by the engineer.

Land Easement (amended use permit modification): An amended use permit will be applied for with the U.S.F.S. as the tank will be located on federal lands within the use

permit area defined for the existing tank. USFS anticipates processing of the amended use permit will take 60 days to complete.

Assessment and Evaluation: The BCSD has completed an assessment of project alternatives and has adopted the proposed project which is the construction of a new 45,000 gallon tank. The alternatives were evaluated based on construction and operational costs, requirements to operate a given alternative (such as licensing to operate a treatment facility).

Engineering Plans, Specifications and Estimates: A preliminary plan will be prepared to provide an attachment to the Negative Declaration. Since the tank will be located in an area previously surveyed for the existing tank then only a minor survey will be needed to update the topography. Structural calculations will be prepared and provided to Mono County Building Department for permitting of the tank. Grading will be minimal and therefore a grading permit will not be necessary from Mono County. Review of the tank and piping will be submitted to Mono County Environmental Health Department for review and approval as the BCSD is permitted through Environmental Health.

Plans will include specifying the tank level sensor and connecting the sensor to the existing well pump control system. The tank level will be wired to a switch that will allow signaling the pump controls with either the existing or new tank level sensor.

Plans will specify the use of Caltrans standards for structural tank foundation concrete type, class and placement. The bolted steel tank will conform to AWWA standard 103 and anchorage to the foundation will be in conformance with current California Building Code seismic requirements. All piping and valving will conform to AWWA standards. The tank foundation vertical and lateral analysis will be submitted to Mono County Building Department for permitting. No design has been completed for this project to date.

Environmental Processing: A CEQA Categorical Exemption form will be prepared for the project to confirm the project falls within those guidelines for a water storage tank less than 100,000 gallons in volume. A NEPA Categorical Exemption will be submitted to U.S. Forest Service for approval to satisfy Federal requirements for environmental review. The CEQA Cat. Ex. will be processed through the State Clearinghouse before being presented to the Mono County Board of Supervisors for adoption. Approved CEQA and NEPA documentation will be submitted to DWR once adopted by the County of Mono and USFS.

Project Construction and Performance Testing: Project construction is anticipated to take only 45 days and include tank pad fine grading, installation of piping to the tank, foundation excavation and pouring of the concrete foundation, tank erection, and painting of any scratches in the epoxy coating prior to filling the new tank. Once operational the new tank will be placed on-line and the existing tank will be isolated, drained and new epoxy coated bolts will be installed to replace the existing corroded bolts. Testing and filling of the existing tank will be completed and both tanks will be placed on-line. Performance testing will be completed in accordance with ASTM standards for foundation subgrade and tench backfill preparation and compaction, Concrete inspection will also be completed in accordance with ASTM standards. Inspection of the delivered tank panels, and bolting will be completed during erection and inspection and repair of any leaks will be performed when the tank is filled.

Disinfection of water mains constructed and testing per AWWA standards will also be completed before approving the water main installation.

Environmental Compliance: The area of construction does not have any environmental mitigation requirements based on the area being disturbed during the construction of the existing tank and water supply mains. Compliance will be limited to revegetation of any disturbed areas per USFS requirements.

Construction Administration: Will include coordination with engineer and contractor during bidding for information requested by bidders. Bid opening and award to lowest bidder meeting all bid package requirements. During construction processing of payment requests including inspection to determine the materials requested for payment by the contractor were installed and approved by the project inspector. Final project construction approval for the completed project that will include a project operational walk through and preparation of a completion report.

## Project #9: Brackish Water Resource Study

## Project Proponent: Indian Wells Valley Water District


### Abstract

The Indian Wells Valley groundwater is the only freshwater source that serves the communities of Ridgecrest, Inyokern, Trona, China Lake and numerous citizens living in local unincorporated areas. The aquifer is recharged with snowmelt from the Sierra mountain range bordering the valley to the west. Groundwater levels have been declining in the basin on an average of 1 to 1 ½ feet per year for over 50 years (TtEMI, 2003). While scientists believe there is a great deal of water in the aquifer, it is not all potable but is instead brackish. Years of drought and long-term use has diminished the potable source of water. Brackish water treatment will be required in the future.

The major objective of this project is to confirm that a new water source can be developed, in an environmentally sound way, from brackish water to provide a much-needed new potable source of water for the IWV. This will improve water source reliability and contribute to the long-term benefits of this growing inland community. This project would also become the basis for future decision-making activities associated with a local water supply.


### Completed Work

To protect the current groundwater resource and to develop a plan to assure a safe and reliable water supply for the residents of the IWV, a Cooperative Groundwater Management Group was formed in 1995 and a Cooperative Groundwater Management Plan was signed and approved by several private and public entities and updated in 2006. The Cooperative Groundwater Management Group includes the Indian Wells Valley Water District (IWVWD), China Lake Naval Air Weapons Station (NAWS), Searles Valley Minerals (SVM), Inyokern Community Service District, Inyokern Airport District, Kern County Water Agency, the U.S. Bureau of Land Management (BLM), Quist Farms, Eastern Kern County Resource Conservation District, and the City of Ridgecrest (http://www.iwvgroundwater.org/).

The stakeholders in the IWV basin have worked together cooperatively over the past several years to achieve a number of key accomplishments, which include the following items.

- Well spacing and design improvements to distribute the effects of continued withdrawals on declining groundwater levels.
- Well abandonment program to minimize impacts from cross connection of aquifers.
- Enhanced and increased conservation programs to reduce water use.
- Increased and continuous groundwater-level and water-quality monitoring.
- Increased the number of monitoring wells through cooperative program involving the Navy SeaBee well drillers.
- Completed two California State local assistance grant projects to develop a Geographic Information System (GIS) of the groundwater data, installation of wells, implementation of a comprehensive groundwater monitoring program, and

completion of a hydrogeologic study to update the hydrogeologic conceptual model.
- Development of a basin-wide MODFLOW groundwater flow model.
- Adoption of seven basin planning objectives which cover basin groundwater monitoring, groundwater extraction, water conservation, water reuse, participation in the Inyo-Mono Integrated Regional Water Management Plan (IRWMP) and other alternative water management options, continued cooperative groundwater data efforts to improve basin understanding, and an inter-agency management framework.
- A year-long pilot study was conducted to determine if brackish groundwater desalting is a viable option for the IWV. The pilot study demonstrated that the selected treatment train of reverse osmosis (RO) followed by electrodialysis reversal (EDR) was technically feasible and can effectively produce potable water. The study found that this method would more reliable and likely less costly than water importation.

The current efforts conducted in the IWV are under the leadership of the IWVWD, Indian Wells Valley Cooperative Groundwater Management Group, Searles Valley Minerals, Kern County Water Agency, BLM, and NAWS China Lake. These current efforts include meetings of the Indian Wells Valley Cooperative Groundwater Management Group Technical Advisory Committee, and IWVWD Alternate Water Supply Committee. Additionally, the IWVWD and the Cooperative Water Management Group are participating in the development of the IRWMP.
Listed below are some of the key projects that are either planned or being considered for the near future by these groups:

- Redistribution of IWVWD pumping including the possible location of supply wells on NAWS;
- Cooperative groundwater banking project with Los Angeles Department of Water & Power (LADWP);
- Increased wastewater effluent reuse with a tertiary wastewater treatment plant upgrade; and
- Brackish water supply project.

**Project Map**

See Figure 11.

## Tasks

Previous groundwater studies in the basin indicate that the groundwater budget in the IWV is in deficit, and that while there appears to be an abundant supply of groundwater, the water of highest quality is being extracted now. Eventually brackish water will need to be treated and used in order to continue supplying potable water to the residents of IWV. Additionally, it may be possible to extract and treat brackish water, and re-inject a portion of the treated water into the deeper aquifer for recharge and subsequent use.

An approach has been developed to evaluate IWV brackish water resources. The approach consists of five tasks, detailed below and outlined in Table 7.

- Groundwater basin delineation
- Water quality quantification
- Identify and address data gaps
- Analyze basin geochemistry using spatial and temporal analysis
- The final deliverable will be a report that includes the findings and conclusions from the study and provides recommendations for development of the brackish water supply

CEQA will be required. It is likely NEPA will be required.

The entire project is expected to take approximately 12 months.

IWVWD, NAWS and SVM are funding partners for the Brackish Water Resource Study.

**Project Management**
Our project manager will be the point-of-contact for IWVWD staff and will ensure that the project is completed on-time and within-budget. Our team will establish and maintain project communication with all team members via a web-accessible project site. The project site serves several purposes:

1. Tracks project progress and status;
2. Facilitates communication among the members of the project team;
3. Provides a repository for findings during the analysis; and
4. Establishes a vehicle for quality assurance and quality control of the overall project effort.

In consultation with IWVWD, the consulting hydrogeologist will also define and communicate team deadlines and disseminate data via this website.

**Project Meetings**
In addition to the project website, we anticipate holding up to three meetings. These meetings will include:

- One project kick-off meeting;
- One intermediate meeting; and
- One meeting to present final results.

For each meeting the project manager will attend in person, while the other necessary team members will attend via video conferencing. This arrangement allows for cost-effective and environmentally-friendly meetings.

**Groundwater Basin Delineation**
Numerous studies have been performed regarding the hydrogeology of the groundwater basin. Two studies were performed for Local Ground Water Assistance Program AB303 grants (TtEMI, 2003; Stoner and Bassett, 2008). Data from these studies and other previous studies were incorporated into a groundwater flow model of the region (Cain, 2009). This groundwater flow model was used to anticipate pumping impacts for the next 27 years of IWVWD operation.

These studies generally focused on the basin from a freshwater supply perspective. The goal was to identify and understand the sources of available fresh water. The depth of the basin and size of brackish water reservoir in the aquifer is not well understood in most areas. We propose reviewing the same data sources used in the previous studies to develop a conceptual model that identifies and includes brackish water sources. This conceptual model will include a re-evaluation of basin recharge focused on identifying brackish water age, origin, and general recharge to the groundwater basin.

Our approach will be to first gather data and conduct a site reconnaissance. We will review historical data including: boring and well log records; geophysical surveys; and the interpretation of the hydrogeology in previous studies. Our review will focus on data relative to brackish water in the basin that has not been previously incorporated into the existing basin conceptual models. We will incorporate this new information/perspective into the basin conceptual model. The conceptual model will be evaluated for data gaps that would help complete our understanding of the system and allow us to adequately model and predict brackish water quantity and flow in the basin. In summary, this task includes:

- Review existing groundwater basin data
    - boring and well log records;
    - geophysical surveys; and
    - the previous interpretations of the hydrogeology from previous studies.
- Incorporate new information into the conceptual model of the basin aquifer.
- Identify data gaps.

*Review of boring logs and existing conceptual models*

There is good coverage of boring logs available in some areas of the basin. Recently Stoner and Bassett (2008) added 8 monitoring wells to address data gaps identified in previous hydrogeologic studies (TtEMI, 2003). These wells are located along the western and southwestern corner of the valley and were installed primarily to improve the conceptual model in this portion of the valley. However, there is still insufficient data to deterministically specify hydrostratigraphic units throughout the basin (Cain, 2009). Data gaps appear to be the greatest in the deepest portions of the aquifer where brackish water occurs.

The hydrogeologic conceptual model of the aquifer basin has been refined in multiple studies (von Huene, 1960; Bean, 1989; O'Brien, 1989; Berenbrock and Martin, 1991; Steinpress et al., 1994; TtEMI, 2003; Stoner and Bassett, 2008) over the past 40 years. TtEMI (2003) provided a comprehensive description of the conceptual groundwater basin. Stoner and Bassett (2008) then refined the conceptual model using a 3D geologic simulator and conducted additional work on identifying sources of groundwater recharge. Generally the unconsolidated Quaternary deposits have been divided into two main aquifers: a shallow aquifer and deep aquifer. The shallow aquifer occurs in the eastern portion of the valley and generally has high concentrations of dissolved solids (brackish water). The underlying deep aquifer is much larger and provides the water for regional public water supply. Previous studies have identified brackish water at the bottom of the deep aquifer and generally throughout the upper aquifer (TtEMI, 2003; Stoner and Bassett, 2008; Cain, 2009). The hydraulic connection between the two aquifers is not well characterized. Continued pumping from the deep aquifer may be

inducing recharge from the upper aquifer, and this pumping may be contributing to declining water quality in the deep aquifer (Stoner and Bassett, 2008).

Data will be reviewed from borings advanced since the 2008 Stoner and Bassett report and review existing reports for any additional information that can help expand our understanding of the groundwater basin. The data review will be focused to increase our understanding of those areas that are believed to contain brackish water. In addition, staff will try to better understand the hydraulic connection between the upper and lower aquifers.

*Geophysical Data Review*

Geophysical survey data is useful for providing supplementary data to boring log data. Down hole geophysics can provide greater clarity in the interpretation of well borings, and surface geophysical studies can provide stratigraphic information in areas where few boring logs exist. In addition, geophysical studies can be designed to delineate fresh water from brackish water. Several geophysics studies were completed previously. The following reports will be minimally reviewing as a beginning step:

1. Berenbrock, C. 1987. “Ground-water Data for Indian Wells Valley, Kern, Inyo, and San Bernardino Counties, California, 1977-84.” U.S. Geological Survey (USGS) Open-File Report 86-315.
2. Berenbrock, C., and P. Martin. 1991. “The Ground-Water Flow System in the Indian Wells Valley, Kern, Inyo, and San Bernardino Counties, California.” USGS Water Resources Investigations Report 89-4191.
3. Monastero, F.C., A.M. Katzenstein, J.D. Walker, and A.E. Sabin. 2002. “Neogene Evolution of the Indian Wells Valley, East-Central California.” *In* A.F. Glazner, J.D. Walker, and J.M. Bartley (Editors), “Geologic Evolution of the Central Mojave Desert and Southern Basin and Range.” Geologic Society of America Memoir 195.
4. O’Brien, D.P., 1989, Compilation and Interpretation of Gravity and Magnetic Data in the Indian Wells Valley, Including Portions of Bakersfield and Trona 1:250,000 Quadrangles, California, ICON Resources, Ltd., Prepared by Comap Explorations Services, Inc. for Eastern Kern County Resource Conservation District, 35 pages.
5. Stoner, M.D. and Bilhorn, T., March 1995, Native Spring Investigation Data Report, NAWS CL TP 005, 87 pages.
6. Stoner, M.D. and Bassett, R.L., March 2008, Installation and Implementation of a Comprehensive Groundwater Monitoring Program for the Indian Wells Valley, California.
7. TtEMI. 2002. “Preliminary Basewide Hydrogeologic Characterization Report, NAWS China Lake, California.” Final. June.
8. Von Huene, Roland Ernst, 1960, Structural Geology and Gravimetry of Indian Wells Valley, Southeastern California, University of California at Los Angeles, PhD Thesis, 78 pages.
9. Zbur, R.T. 1963. "A Geophysical Investigation of Indian Wells Valley, California." Naval Ordnance Test Station TP2795.

These reports consist of the interpretation and results of down-hole geophysical logs, gravity surveys, and seismic surveys. In addition, other geophysical studies in the region will be reviewed and evaluated. Unless more recent data is found to the contrary,

it will be assumed the data in these reports is correctly interpreted and staff will not spend effort re-analyzing raw data.

The focus of the review will be to better delineate the brackish zones of the groundwater basin (upper aquifer and deep lower aquifer). This review may also inform our understanding of the interconnectedness of the shallow and deep aquifers.

**Water-Quality Quantification**

Water chemistry is variable throughout the IWV, both spatially and with depth (TtEMI, 2003; Stoner and Bassett, 2008). Currently, shallow groundwater is generally of lower quality with high total dissolved solids (TDS), while the deep aquifer is generally good quality. However, there is a zone of very deep water that has the highest concentrations of total dissolved solids (TtEMI, 2003). Additionally, water chemistry is expected to change as pumping in the basin continues and brackish water becomes more prevalent.

While there is known variability and expected chemistry changes due to pumping, the spatial extent of the brackish water, the interactions between the shallow and deep aquifer, and recharge are not well understood. Additionally, previous studies have focused mostly on water-quality degradation. This proposed study will assess the potential to use brackish water a water source than can be treated and delivered for potable use. The study will also focus on the entire IWV groundwater basin while most other studies have focused on specific areas within the basin.

***Review Previous Water-Quality Reports and New Raw Water-Quality Data***

Since several studies have been completed previously and some data gaps have been addressed in recent years, we will begin by minimally reviewing the following reports:


1. Berenbrock, C., and R.A. Schroeder. 1994. "Ground-water Flow and Quality, and Geochemical Processes, in the Indian Wells Valley, Kern, Inyo, and San Bernardino Counties, California, 1987-88." USGS Water Resources Investigations Report 93-4003.
2. Houghton, B.D. 1994. “Groundwater Chemistry of the Indian Wells Valley.” Unpublished Master’s Thesis. California State University, Bakersfield, California.
3. Houghton HydroGeo-Logic. 1996. “Geohydrologic Investigation Report, Naval Air Weapons Station, Indian Wells Valley, China Lake, California.”
4. Stoner, M., Decker, D., Watt, D., and Moulton, G. October, 1995. “Indian Wells Valley Deep Well Drilling Project. Volume 1. Data Report (1990-1992)”. NAWS CL TP 004, Volume 1.
5. Stoner, M.D. and Bassett, R.L., March 2008, Installation and Implementation of a Comprehensive Groundwater Monitoring Program for the Indian Wells Valley, California.
6. Tetra Tech EM Inc (TtEMI) 2003. Groundwater Management in the Indian Wells Valley Basin, Ridgecrest, California. Prepared for the Eastern Kern County Resource Conservation District
7. Warner, J.W. 1975. "Ground-Water Quality in Indian Wells Valley, California." USGS Water Resources Investigations Report 8-75. June.
8. Whelan, J. A. and Baskin, R. 1987. A geochemistry study of Indian Wells Valley, Inyo and Kern Counties, CA: Eastern Kern County Resource Conservation District.

9. Wilcox, L., Hatcher, J., and Blair, G. 1951. Quality of Water in Indian Wells Valley, California. USDA Salinity Lab, Research Report 54.

While these studies include groundwater quality and provide historical data, additional water-quality data has been collected within the groundwater basin since 2007. These most current data have not been incorporated into the existing water-quality framework. The data collected since 2007 will be integrated into the existing data and new analysis will be conducted. Data sources may include the US Geological Survey, the California Department of Water Resources, NAWS China Lake, and IWVWD.

Understanding groundwater recharge to the basin is an important element when trying to establish the source and flow of brackish water in an aquifer. The preliminary review and evaluation of aquifer recharge will be based primarily on the integration of the groundwater basin delineation preliminary analysis and the water-quality preliminary analysis.

*Preliminary Mapping and Analysis*

Some preliminary mapping and analysis on the existing water-quality data will need to be completed. This preliminary work will help identify existing data gaps within the water-quality data; mapping will be completed using GIS. Graphs and transects will also be developed. Mapping and analysis will be completed for TDS, some major ions, and stable isotopes. Where age-dating has been completed, staff will also evaluate the amount and quality of the data gathered.

**Identify Data Gaps**

Staff will identify data gaps by first updating the existing conceptual model using information from our preliminary review and analysis of the existing basin and groundwater-quality data. We expect the primary improvements in the conceptual model to include a better understanding of:

- brackish water in the basin;
- the interaction between the upper and lower aquifers; and
- recharge to the basin.

New maps of the basin will be developed through the use of GIS. These maps will reflect the refined groundwater basin conceptual model. Staff will identify the areas best suited for additional brackish water exploration and study by using a 3D geologic simulation tool to generate refined cross-sections of the basin, focusing on the areas of additional study.

From the review process, the mapping exercises, and the revision of the basin conceptual model, significant data gaps will be identified. Based on the preliminary review of the existing data, the following potential data gaps have been identified:

- Of recharge into the aquifer;
- Areas where the aquifer bottom is unknown;
- Lack of knowledge regarding the interconnectedness of different zones;
- Unknown saturated thickness of the aquifer in some areas;
- Extent of the brackish water zones in each of the shallow and deep aquifers;

- The extent of the deepest zone where TDS concentrations are highest;
- Insufficient number of samples taken from a well or area;
- Insufficient constituents analyzed in a particular well or area;
- Unknown depth of the screened interval for a particular well; and
- Lack of seasonal information.

It is expected that additional data gaps may be discovered through the course of the comprehensive data review.

**Address Data Gaps**
While the data gaps identified above are expected, the full scope of what is required to address the data gaps is uncertain. However, we can generally anticipate the steps that are required to fill in these data gaps. Staff will limit the uncertainty in scope by focusing our efforts to address the data gaps on the area(s) where the greatest potential for brackish water is identified.

*Use Geophysical Surveys to Determine Groundwater Basin Geometry and Identify Brackish Water Zones*

The overall objective of the proposed geophysical survey program is to further characterize the subsurface geology of the IWV, and to further delineate the lateral and vertical extent of zones of brackish water within the deeper portions of the unconsolidated aquifer. Based on experience in similar geologic terrains, a geophysical exploration program consisting of gravimetry and controlled source audiomagnetotellurics (CSAMT/MT) techniques will be completed. Combined use of complimentary geophysical methods is recommended whenever possible to reduce the level of uncertainty inherent with any remote sensing technique.

Specifically, within the IWV, the gravimetry survey would be utilized to potentially further define:

- The depth to and the configuration of the surface of the basement rock complex; and
- Fault zones within the basement rock complex.

The proposed CSAMT/MT survey would be utilized (in conjunction with the gravimetry survey results) to potentially further define:

- The lateral and vertical extent of significant electrically conductive brackish water zones within the unconsolidated aquifers;
- Delineate zones of higher electrical resistivity material (i.e. potential permeable sand and gravel zones) and lower electrical resistivity zones (i.e. lower permeability lacustrine clay and delta deposits);
- Depth to and the configuration of the surface of the basement rock complex; and
- Fault and fracture zones within the basement rock complex

The gravimetry survey will consist of a series of profiles lines (comprised of 400 individual stations with a consistent spacing) that will be strategically positioned in the sub-region where additional data is needed to provide sufficient data coverage. The results of the gravimetry survey will be used to define areas for the CSAMT/MT survey.

For example, areas where suspected faults or thicker sequences of unconsolidated material (bedrock lows) or areas with documented poor water quality will be surveyed with the CSAMT/MT technique to delineate suspected brackish water zones. In addition, CSAMT/MT soundings (80 individual stations) will also be conducted in the sub-region where additional data is needed to further define subsurface geologic conditions. At the conclusion of the geophysical exploration program, all data will be processed and modeled to further define the subsurface geology and potential zones of brackish water within the IWV.

*Drill New Borings and Install Additional Monitoring Wells*

If needed, we will determine up to four locations for monitoring wells, including the specifications for the screened interval. Borings and monitoring wells may be needed to:

- Identify the saturated thickness of the aquifer;
- Determine interactions between the shallow and deep aquifer;
- Determine the extent of the brackish water; or
- Expand the spatial distribution of water-quality samples.

The Navy SeeBees have previously drilled numerous monitoring wells in IWV. We will pursue opportunities to work cooperatively with the SeeBees for future monitoring well installation. The drilling of these borings would generally be overseen either by the SeeBees or IWVWD (no downhole geophysics would be included). New borings and monitoring wells would only be used if additional data are needed after the geophysical surveys are completed.

*Conduct New Water-Quality Sampling*

We anticipate needing to collect up to 25 new water-quality samples and analyze them to determine the water source, the age of the water, the zones of brackish water, and the interconnectedness of the aquifer. Samples will be analyzed for major ion composition, stable isotopes, and radioactive isotopes. The specific isotopes used will be based both on the existing data and the most appropriate and cost-effective methods.

*Conduct Aquifer Pumping Tests*

One way to determine the interconnectedness of aquifers is to perform an aquifer test. Previous work in the basin has included the installation of paired wells. If these paired wells were installed in the area(s) where additional data are needed, we would use these existing monitoring wells to conduct an aquifer test. The paired wells would allow us to pump water out of the aquifer and then measure and monitor the effects of the pumping on both the shallow and deep aquifers. If needed, up to four, 24-hour aquifer pumping tests on the existing wells will be completed.

**Analyze Basin Geochemistry**

The results of the data review and new data collection will be incorporated into the existing data set.

*Spatial and Temporal Analysis*

Spatial and temporal analysis will be completed on this newer and more complete dataset. The final methods used for the analysis will be determined by the quantity and quality of data available. However, it is anticipated that the study will use Mann-Kendall trend analysis, GIS, and graphs/transects to evaluate the groundwater basin, water-quality trends through time and space, and finalize our basin conceptual model. We will evaluate:

- Aquifer stratigraphy;
- Brackish water in the basin;
- The relationship between pumping rates and water quality;
- Major ion composition (Ca, Mg, Na, Cl, Br, $SO_4$, $CO_3$, $CO_2$) to help determine source water; and
- Stable isotope data to help determine source water.

Mann-Kendall analysis will be used to assess temporal trends. Mapping will also be used to visualize and interpret the newest data sets. These graphics will help inform an understanding of the groundwater basin and water quality.

*Update Conceptual Model*

The analysis of the data will result in a refined conceptual model of the groundwater basin. Our refined conceptual model will have the greatest detail in the area where we concentrated our field work (i.e. performed the geophysical survey). The conceptual model will describe the groundwater basin geometry, the vertical water-quality profile, and the flow of water into and out of the local area. Our improved understanding of basin recharge relative to water quality will be incorporated into the conceptual model, allowing better assessment of the potential change in water quality with continuous pumping. The refined understanding of basin recharge will be applied over the entire basin.

The conceptual model will be depicted with new maps of the groundwater basin and detailed sub-region. Maps and graphs will illustrate the aquifer stratigraphy and brackish water distribution. If the deepest water has higher TDS concentrations, a separate map will be created for the deepest zones. We will also update our previously generated maps and graphs in the preliminary data analysis.

*Use Groundwater Model to Estimate the Impact of Pumping on Brackish Water Distribution*

The regional MODFLOW groundwater flow model developed by Cain (2009) will be used as the basis to better understand the change in water chemistry from pumping a well. We will modify the existing model to include the effects of pumping on brackish water distribution. It is expected that a new well(s) and zones of brackish water will be added to the model. Structural and broad, basin-wide changes are not expected to be made to the model. However, model parameters may be updated at a local scale with information from the updated conceptual model and to account for brackish water flow.

The model will be used to evaluate various pumping scenarios in an area where a brackish water resource may be developed. The model runs will provide information to help predict impacts from continuous pumping of a brackish water well and may include the following items:

- change in water quality out of the well over time,
- potential effects of water quality in the basin,
- flow paths and well capture zones.

The model is expected to be used at a coarse level to see if a feasibility study would be justified for the brackish water development.

**Final Report**
The results of the study will be described in a final report. The report will include the review of previous studies, initial analysis, data gaps identified, work performed to address these data gaps including methods, data, and analysis, and conclusions and recommendations. The final conclusions and recommendations will provide following:

- A refined groundwater basin conceptual model;
- New maps and figures;
- Viability of developing a brackish water supply;
- If applicable, recommended location(s) for brackish water supply development; and
- If applicable, impacts of brackish water source development on the groundwater basin and other pumping centers.

| **Indian Wells Valley Water District Work Plan Outline** |
|---|
| *Budget Category (a): Direct Project Administration Costs* |
| Task 1: Administration<br><br>Direct project administrative work will include project management by the consultant hydrogeologist including billing and the final report. Project oversight will be conducted by the IWVWD General Manager and District Engineer.<br><br>This task has not yet started.<br><br>Deliverables: Preparation of invoices and other deliverables as required |
| Task 2: Labor Compliance Program<br><br>Not applicable |
| Task 3: Reporting<br><br>The IWVWD Chief Financial Officer and the IWVWD District Engineer will prepare and submit the necessary quarterly, annual and final reports. |

This task has not yet started.

Deliverables: Submission of quarterly, annual and final reports as specified in the Grant Agreement

*Budget Category (b): Land Purchase/Easement*

Not applicable

*Budget Category (c): Planning/Design/Engineering/Environmental Documentation*

Task 4: Assessment and Evaluation

The consultant hydrogeologist will perform the following tasks:

- Groundwater basin delineation, which will require reviewing reports and borings and geophysical data review and analysis;
- Water quality quantification, which will require data review, analysis, and mapping;
- Identify and address data gaps specifically dealing with gravity geophysics, CSAMT geophysics, new borings, water quality sampling and aquifer tests; and
- Analyze basin geochemistry using spatial and temporal analysis; and updating the conceptual model.

This task has not yet started.

Deliverables: Technical studies

Task 5: Final Design

Not applicable.

Task 6: Environmental Documentation

This project is a project under CEQA, and the level required is a negative declaration or a mitigated negative declaration.

This task has not yet started, but it is possible that it will be done by June 2011.

Deliverables: Approved and adopted CEQA/NEPA documentation

Task 7: Permitting

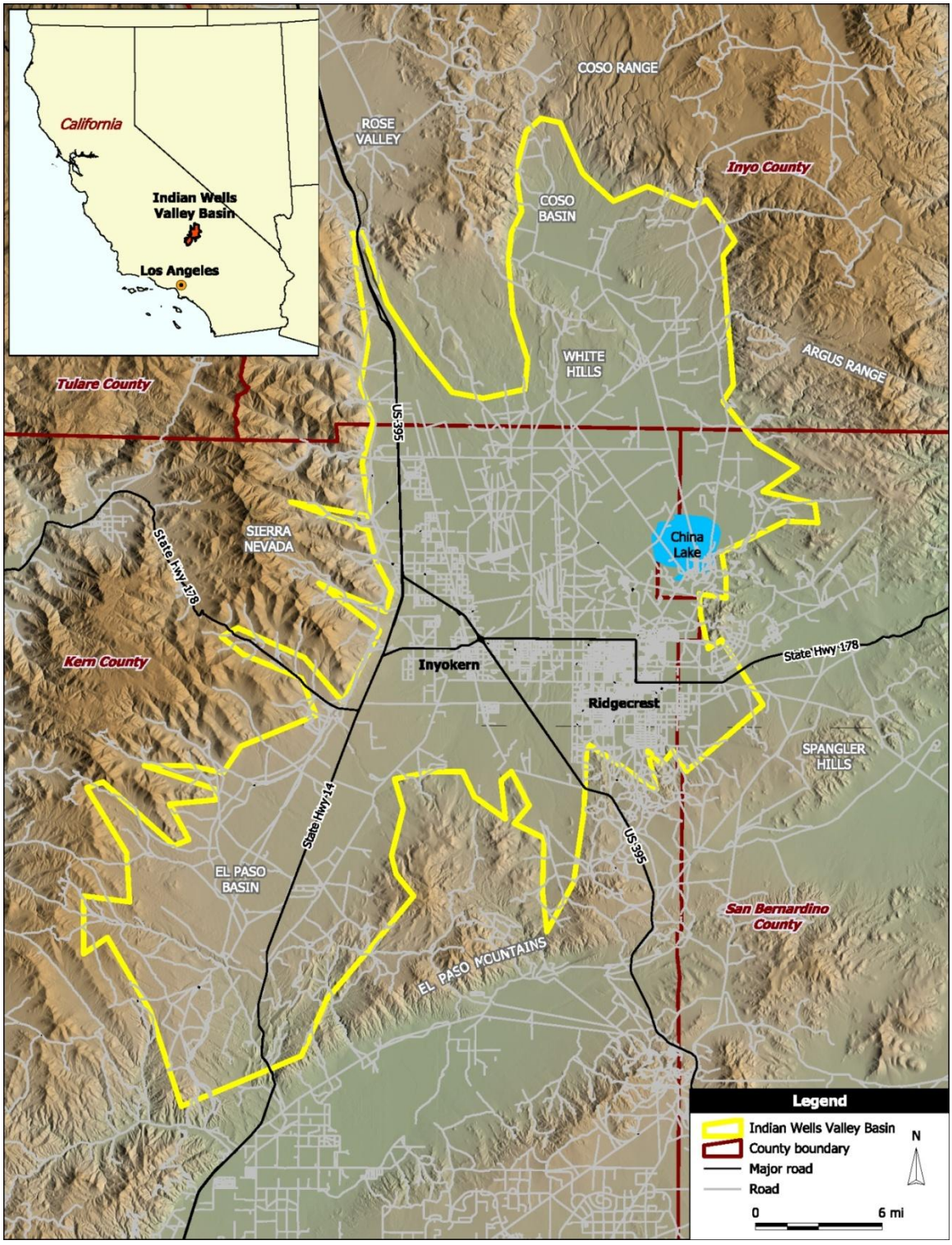
Not applicable.

*Budget Category (d): Construction/Implementation*

Task 8: Construction Contracting

| |
|---|
| Not applicable. |
| Task 9: Construction<br><br>Not applicable |
| *Budget Category (e): Environmental Compliance/Mitigation/Enhancement* |
| Task 10: Environmental Compliance/Mitigation/Enhancement<br><br>Not applicable |
| *Budget Category (f): Construction Administration* |
| Task 11: Construction Administration<br><br>Not applicable. |

**Figure 11.** Project map for Brackish Water Resource Study



## Project #10: Laws and Lone Pine Tanks Project

## Project Proponent: Inyo County Department of Public Works

**Abstract**

The goals of this project are to a) install a new 10,000 gallon hydropneumatic tank in Laws; and b) in Lone Pine, replace the interior ladder, add a cathodic protection system, and recoat the interior ladder and tank. The objectives are to supply water more reliably by increasing the amount of hydropneumatic storage in Laws and optimizing the existing tank in Lone Pine extending its usefull life

Inyo County owns and operates the water systems serving the unincorporated towns of Laws and Lone Pine. The combined population served by the water systems is approximately 1,700 people. The Lone Pine water system is supplied by water from a well and gravity head storage tank. A well and hydropneumatic storage tank supplies the Laws community water system. Laws and Lone Pine are Disadvantaged Communities. Ratepayer revenues for Lone Pine cover Operations & Maintenance (O&M) but are insufficient to build capital reserves for upgrades. The County has had limited success raising the water rates. The Laws water system supplies water for only 14 ratepayers. Monthly revenues are too small to operate the system in the black. Inyo County subsidizes the system operation and maintenance costs.

The hydro-pneumatic tank in Laws is deteriorating and cannot reliably maintain system pressure. The manway hatch is showing signs of rusting out on the interior. The existing tank operates at about 1,800 gallons. A 2,000 gallon fire truck can potentially drain the tank. An empty tank can introduce air into the water system resulting in water hammer that can severely damage the water system. The tank in Lone Pine was constructed without a cathodic protection system. The tank internal access ladder is not galvanized and was not coated during construction. An inspection performed by a diver in 2008 observed that the ladder and tank are rusting.

This project addresses the adopted Inyo-Mono IRWMP goals and objectives (in parenthesis): 1A, 1B, 1C, 1F, 4A, 4B, 6A, 6B

1. Protect, conserve, optimize, and/or augment water supply:

1A: The new hydropneumatic tank will improve water supply reliability and capacity in the community of Laws. Adding a cathodic protection system and interior recoating will extend the Lone Pine tank service life. (Improve water supply reliability).

1B: Improves Laws community system pump run time efficiency with increased hydropneumatic capacity. (Improve system flexibility and/or efficiency).

1C: The Lone Pine Tank upgrade supports compliance with state standards requiring an interior ladder in tanks. The Laws community tank upgrade will comply with state requirements to maintain 40 PSI minimum pressure in distribution systems. (Support compliance with curent and future state and /or federal water supply standards).

1F: Optimizes the Lone Pine tank by extending the tank service life with cathodic protection and recoating the interior. (Optimize existing storage capacity).

4. Maintain and enhance water, wastewater, and/or power generation infrastructure efficiency and reliability.

4A: Systematically and strategically rehabilitates the Lone Pine system with tank improvements and a new hydropneumatic tank for the Laws community. (Systematically and strategically rehabilitate and replace aging water delivery facilities in rural communities).

4B: The project will improve fire protection capability in Lone Pine with a sound tank. Fire protection capability will be enhanced in Laws by providing the extra hydropneumatic capacity to absorb water hammer when a pump starts. (Ensure fire protection capability).

6. Increase participation of small and disadvantaged communities in IRWM process.

6A: Engages Laws and Lone Pine in collaborative effort to improve reliability. (Engage regional communities in collaborative water and natural resource related efforts). See community support letters.

6B: Provides assistance to the disadvantaged communities of Laws, Independence and Lone Pine for access to funding for water systems projects. (Provide assistance for tribal and DAC consultation, collaboration, and access to funding for water programs and projects).

**Completed Work**

No work has been performed at any level for this project yet.

**Existing Data and Studies**

The data collected to date are experiential, i.e. we know the difficulties we have experienced in the ten-year past. The project is feasible, being standard means employed by other water utilities. The technical methods of ladder placement, painting, cathodic protection and hydropneumatic tank installation are standard in the industry.

A tank inspection report was completed for the Lone Pine tank in 2008 and is included as supporting documentation for this project.

**Project Map**

See Figure 12.

**Project Timing and Phasing**

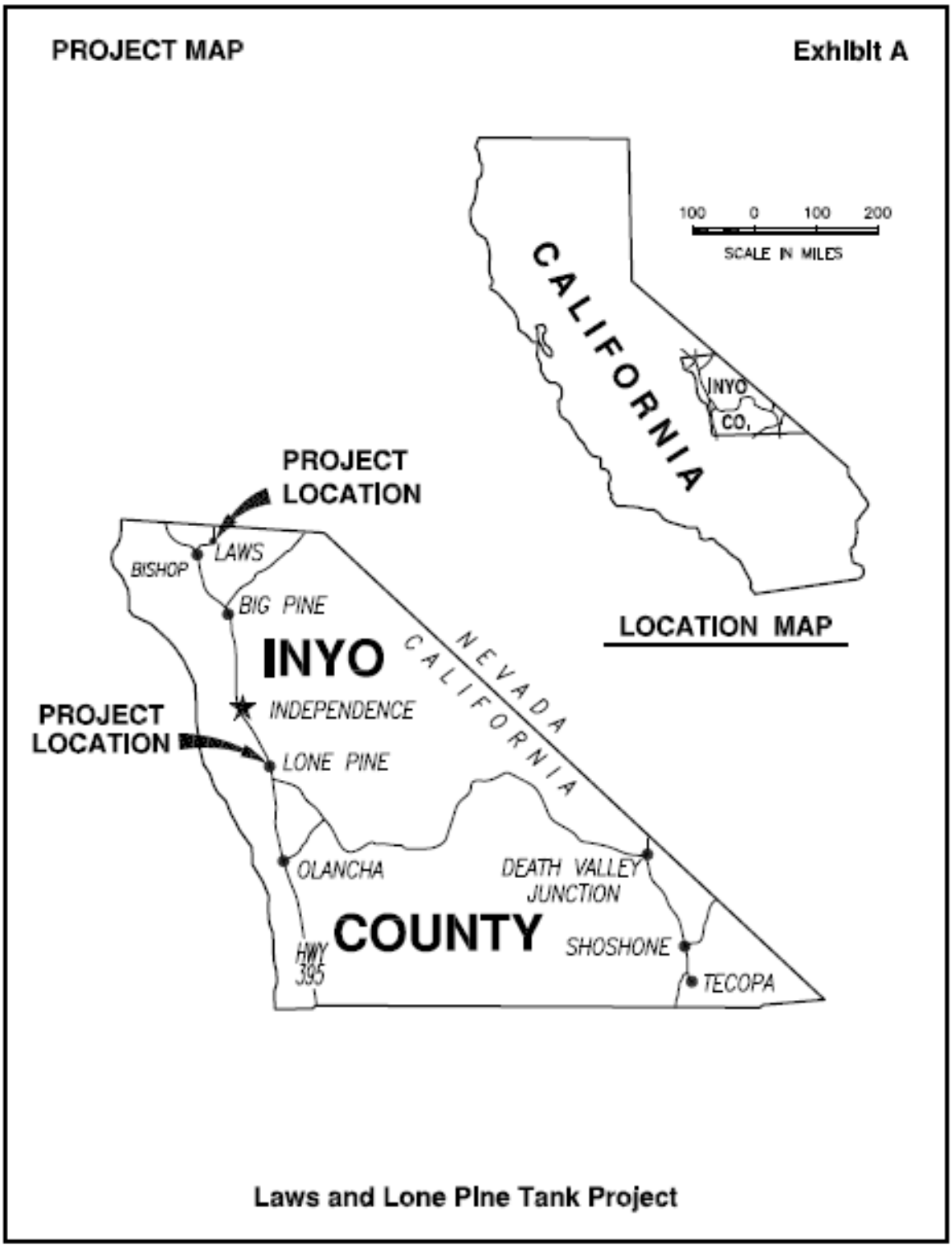
This project is not a phase of construction of any other project. If more than one Inyo County Public Works project is awarded funding, this project could be completed last with the other project(s) completed prior to this project.

## Tasks

| Budget Category (a): Direct Project Administration Costs | |
|---|---|
| **Task 1: Administration** | **Description of Work** |
| | Coordinate the project and construction process. Document the entire process prepare and submit appropriate reports as needed |
| | Deliverables: Preparation of invoices and other deliverables as required. |
| **Task 2: Labor Compliance Program** | |
| | All work will be in compliance with the Davis Bacon requirement for a prevailing wage contract. Submit certified payroll or other documentation required by the Grant. |
| | Deliverable: Submission of Labor Compliance Program |
| **Task 3: Reporting** | |
| | Prepare and submit reports pertaining to the achievement of the tasks or goals identified in the project. |
| | Deliverables: Submission of reports as specified in the Grant Agreement. |
| Budget Category (b): Land Purchase/Easement | |
| | No land or easements required |
| Budget Category (c): Planning/Design/Engineering/Environmental Documentation | |
| **Task 4: Assessment and Evaluation** | |
| | NA No technical studies or evaluations will be required for this project. |
| **Task 5: Final Design** | |
| | Prepare Plans, specifications and contract documents |
| | Deliverables: Completion of project plans and specifications at the 90 percent and final level. |
| **Task 6: Environmental Documentation** | |
| | Filing appropriate CEQA documents |
| | Deliverable: Approved and adopted CEQA documentation |
| **Task 7: Permitting** | |
| | None required |
| Budget Category (d): Construction/Implementation | |
| **Task 8: Construction Contracting** | |
| | Advertise project, open bids, enter into contract with lowest responsive bidder, administer contract, perform construction inspection, process pay requests. |
| | Deliverables: Advertisement for bids; prebid contractors meeting; evaluation of bids; award contract |
| **Task 9: Construction** | |
| | Install hydropneumatic tank and piping, remove and reinstall new interior ladder, install cathodic prot sys and recoat interior |

| | |
|---|---|
| *Subtask 9.1 Mobilization and Site Preparation* | |
| | Contractor to mobilize and prepare for construction |
| *Subtask 9.2 Project Construction* | |
| | Place foundations, tank and piping to system, remove and reinstall new interior ladder, install cathodic prot sys and recoat interior |
| *Subtask 9.3 Performance Testing and Demobilization* | |
| | Laws hydro tank pressure tested & Bac-t tested, LP interior ladder welds inspected, interior storage tank coating holiday tested and warranted for three years. Cathodic system activated after first year inspection. |
| Budget Category (e): Environmental Compliance/Mitigation/Enhancement | |
| **Task 10: Environmental Compliance/Mitigation/Enhancement** | |
| | None Required |
| Budget Category (f): Construction Administration | |
| **Task 11: Construction Administration** | |
| | Complete project closeout and documentation. Submit reports as required to IWRMP, Cal DWR and the County |

**Figure 12.** Project map for Laws and Lone Pine Tank Project



## Project #11: Water Meter Installation – Final Phase

## Project Proponent: June Lake Public Utilities District

### Abstract

In 2002 JLPUD adopted a water meter installation program for all existing commercial and residential properties for water conservation purposes in accordance with AB 1420 water meter compliance. We are in the final phase of this effort. By installing water meters for commercial and residential customers we have found that the overall water usage has been reduced by approximately 32 percent since 2002. Customers who were paying a flat rate fee are now on a tiered rate system and are more conscientious of the amount of water they are using. Additionally, the JLPUD established a Water Management Program, ordinance 2008-01 dated January 9, 2008, that promotes reduced water consumption through consumer awareness and involvement.

### Existing Data and Studies

A 2005 report was completed for June Lake PUD entitled “Standard Specifications for Domestic Water and Sanitary Sewer System Improvements”. This provides background and justification for the water meter installation project and is included as supporting documentation.

### Project Map

See Figure 13.

### Tasks

### Budget Category (a): Direct Project Administration Costs

*Task 1: Administration*

Monitor project progress and submit project invoices as required on a monthly basis.

*Task 2: Labor Compliance Program*

June Lake PUD to follow CA State labor compliance guidelines

*Task 3: Reporting*

June Lake PUD will prepare and submit monthly progress reports on overall project status

**Budget Category (b): Construction Administration**

*Task 4: Construction Administration*

June Lake PUD will monitor and sign off on all meter installations over the project duration

**Budget Category (c): Planning/Design/Engineering/Environmental Documentation**

*Task 5: Assessment and Evaluation*

Planning and design is complete, June Lake PUD will include Standard Operating Procedure for meter installation with bid packages

*Task 6: Environmental Documentation/CEQA*

These upgrades to an existing facility are exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) in accordance with Title 14, Section 15301, page 207 of the California Code of Regulations. June Lake PUD will submit a request for categorical exemption.

*Task 7: Permitting*

There is no permitting required to proceed with project

**Budget Category (d): Construction/Implementation**

*Task 8: Construction Contracting*

June Lake PUD will submit bid documents to prospective contractors and issue contract to acceptable bidder

*Task 9: Construction*

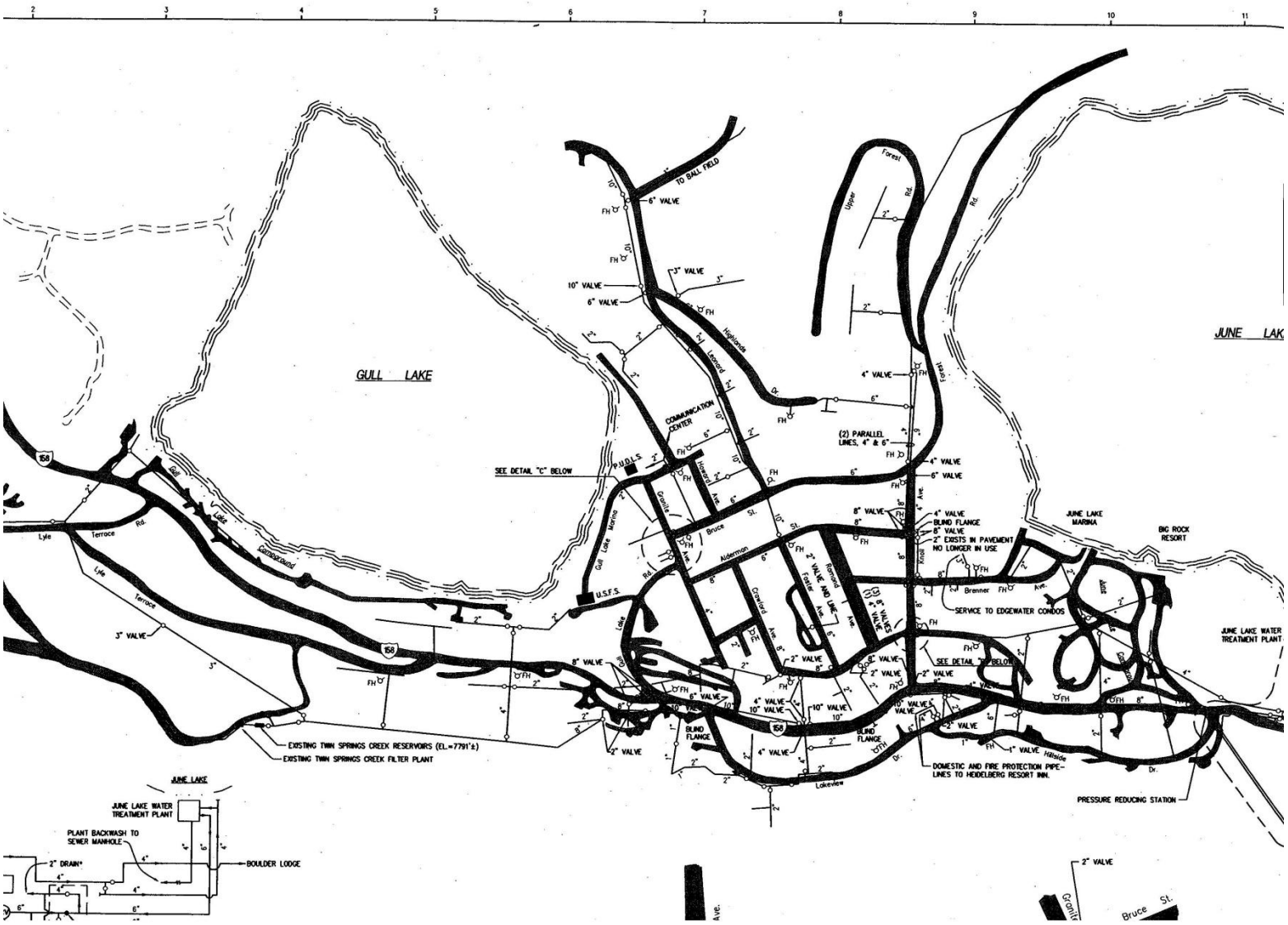
Order Materials (Meter Pits, Meters and miscellaneous pipe fittings)

June Lake PUD to start locating water lines in preparation of digging to expose water line for connection

Contractor to excavate appropriate size hole for meter pit connection, and installation of meters

June Lake PUD to inspect and signoff on meter installs as they are installed

**Figure 13.** Project map for Water Meter Installation Project – Final Phase



## Project #12: Lone Pine, Independence, and Laws Water Meter Project

## Project Proponent: Inyo County Department of Public Works

**Abstract**

The goals and objectives of this project will to replace the residential analog meters with automatic electronic read meters and renovate the Town Demand Meters. The project will provide for accurate measurement of individual water usage and efficient monitoring of the town's gross water demand. The improvements will provide better accounting and billing information and promote water conservation. Converting to automatic electronic read meters will reduce meter reading time from 10 days to 3 days providing for more efficient operations and reduced costs.

Inyo County owns and operates three community water systems serving the unincorporated towns of Laws, Independence and Lone Pine. The combined population served by the water systems is approximately 2,000 people. The proposed project will replace residential analog meters with automatic electronic read meters and renovate the Town Demand Meters. Laws, Independence and Lone Pine are Disadvantaged Communities. Ratepayer revenues for Lone Pine and Independence cover operations and maintenance but are insufficient to build capital reserves for upgrades. The county has had limited success raising the rates. The Laws water system supplies water for only 14 ratepayers. Monthly revenues are too small to operate the system in the black. Inyo County subsidizes the system operation and maintenance costs. The aging analog meters were installed in the 1970's and are no longer accurate and produce unreliable readings for billing. The Town Demand meters have not been certified in ten years. The Independence Town demand meter is not turning freely and under reporting flows.

This project addresses the adopted Inyo-Mono IRWMP goals and objectives (in parenthesis): 1B, 1C, 1D, 1G, 2A, 2D, 3A, 3B, 4A, 5A, 5B, 6A, 6B

1. Protect, conserve, optimize, and/or augment water supply:

1B: Improves system efficiency reducing meter reading time from 10 to 1-3 days. (Improve system flexibility and/or efficiency).

1C: Supports regulations requiring water systems be metered. (Support compliance with current and future state and /or federal water supply standards).

1D: New water meters will enhance water conservation measures. (Address local water supply issues through various techniques, including,…water conservation…).

1G: Conserved water will be available for other uses. (Conserve and/or adapt water uses to future conditions).

2. Protect, restore, and/or enhance water quality:

2A: Supports compliance with cross connection control {or backflow} requirements by fixing leaks at meter connections. (Support compliance with current and future state and/or federal water quality standards).

2D: Protects public health by removing potential cross connections from leaking meters (Protect public and/or aquatic ecosystem health).

3. Provide stewardship of our natural resources:

3A: Less time reading meters results in less vehicle emissions, which protects the air quality (Protect, restore, and/or enhance natural processes, habitats,…).

3B: Conserving water is good stewardship of groundwater, which is good stewardship of surface water as groundwater starts out as surface water. (Protect, restore, and/or enhance ecosystems such as upland forests and meadows dependent on surface/shallow water supply).

4. Maintain and enhance water, wastewater, and/or power generation infrastructure efficiency and reliability.

4A: Replace aging and deteriorating analog meters with electronic automatic read meters in three disadvantaged communities. (Systematically and strategically rehabilitate and replace aging water delivery facilities in rural communities).

5. Address climate variability and/or reduce greenhouse gas emissions.

5A: Water conserved helps to respond to climate variability. (Increase understanding of water related greenhouse gas emissions).

5B: Conserved water and improved meter reading efficiency equates to less pollution and GHG emissions. (Manage and modify water systems to respond to increasing climate variability).

6. Increase participation of small and disadvantaged communities in IRWM process.

6A: The three County water systems cover a 60 mile region of the Owens Valley and serves 15% (2,200) of the valley's approximate 15,000 population. (Engage regional communities in collaborative water and natural resource related efforts). See community support letters.

6B: This project provides assistance and access to funding to the three disadvantaged communities of Laws, Independence, and Lone Pine. (Provide assistance for tribal and DAC consultation, collaboration, and access to funding for water programs and projects)

**Completed Work**

No work has been performed at any level for this project yet.

**Existing Data and Studies**

The data collected to date are experiential, i.e. we know the difficulties we have experienced in the ten-year past. The project is feasible, being standard means employed by other water utilities. The technical means and methods of meter replacement or installation are standard in the industry.

**Project Map**

See Figure 14.

**Project Timing and Phasing**

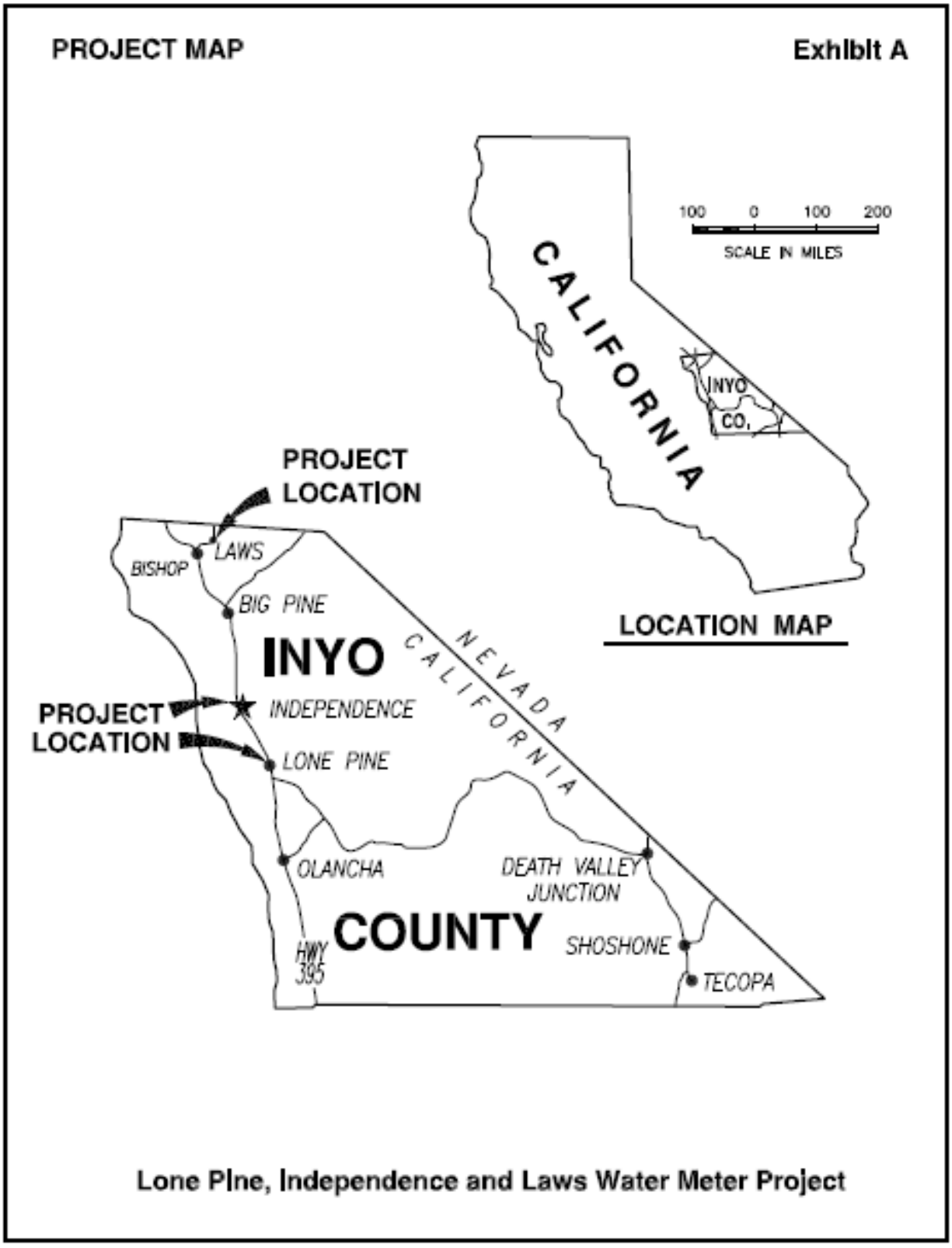
This project is not a phase of construction of any other project. If more than one Inyo County Public Works project is awarded funding, this project may be combined with other projects into one project for contract bidding purposes.

## Tasks

| | |
|---|---|
| Budget Category (a): Direct Project Administration Costs | |
| **Task 1: Administration** | |
| | Coordinate the project, including the environmental, permit and construction process. Document the entire process prepare and submit appropriate reports as needed |
| | Deliverables: Preparation of invoices and other deliverables as required. |
| **Task 2: Labor Compliance Program** | |
| | All work will be in compliance with the Davis Bacon requirement for a prevailing wage contract. Submit certified payroll or other documentation required by the Grant. |
| | Deliverable: Submission of Labor Compliance Program |
| **Task 3: Reporting** | |
| | Prepare and submit reports pertaining to the achievement of the tasks or goals identified in the project. |
| | Deliverables: Submission of reports as specified in the Grant Agreement. |
| Budget Category (b): Land Purchase/Easement | |
| | No land or easements required |
| Budget Category (c): Planning/Design/Engineering/Environmental Documentation | |
| **Task 4: Assessment and Evaluation** | |
| | NA No technical studies or evaluations will be required for this project. |
| **Task 5: Final Design** | |
| | Prepare Plans, specifications and contract documents |
| | Deliverables: Completion of project plans and specifications at the 90 percent and final level. |

| | |
|---|---|
| **Task 6: Environmental Documentation** | |
| | Submit notice of CEQA Categorical Exemption for project |
| | Deliverable: Approved and adopted CEQA documentation |
| **Task 7: Permitting** | |
| | None required |
| Budget Category (d): Construction/Implementation | |
| **Task 8: Construction Contracting** | |
| | Advertise project, open bids, enter into contract with lowest responsive bidder, administer contract, perform construction inspection, process pay requests. |
| | Deliverables: Advertisement for bids; prebid contractors meeting; evaluation of bids; award contract |
| **Task 9: Construction** | |
| | Install water meters per plans and specifications for the project |
| *Subtask 9.1 Mobilization and Site Preparation* | |
| | Contractor to mobilize and prepare for installation of meters. No site prep needed. |
| *Subtask 9.2 Project Construction* | |
| | Install water meters, remove and rebuild town demand meters and reinstall |
| *Subtask 9.3 Performance Testing and Demobilization* | |
| | Are meters installed with arrow toward customer, any leaks, reads collected by collector and transferred into the billing system; can billing system generate a correct bill? |
| Budget Category (e): Environmental Compliance/Mitigation/Enhancement | |
| **Task 10: Environmental Compliance/Mitigation/Enhancement** | |
| | None Required |
| Budget Category (f): Construction Administration | |
| **Task 11: Construction Administration** | |
| | Complete project closeout and documentation. Submit reports as required to IWRMP, Cal DWR and the County |

**Figure 14.** Project map for Lone Pine, Independence, and Laws Water Meter Project



## Project #13: Wastewater Treatment Plan Upgrades – Phase I

## Project Proponent: June Lake Public Utilities District

### Abstract

Our wastewater treatment plant has been in service for over 35 years and in need of upgrades identified below to enhance our treatment process. Currently we do not have a screening device at the head works. Screens are used in wastewater treatment to strain larger particles from the water stream and are usually the first components in the treatment system. The main objective of using a screen is to remove materials and large objects that could damage or cause blockage to downstream equipment, reduce the overall effectiveness and reliability of the treatment processes and ultimately contaminates the final discharge waterway. The main objective is to protect and restore surface water and groundwater quality into the Mono Basin to safeguard public and environmental health and secure water supplies for beneficial uses.

### Existing Data and Studies

The June Lake Public Utility District project proposal for the Wastewater Treatment Upgrades stem from recommendations provided by Boyle Engineering during the evaluation of our entire sewer system in 2005. Our project contains a small portion of the overall improvements that were recommended for our treatment facility as outlined in our work plan and schedules for the IRWMP project proposal. The wastewater system evaluation report is included as supporting documentation for this project.

### Project Map

See Figure 15.

### Tasks

### Budget Category (a): Direct Project Administration Costs

*Task 1: Administration*

Monitor project progress and submit project invoices as required on a monthly basis.

*Task 2: Labor Compliance Program*

June Lake PUD to follow CA State labor compliance guidelines

*Task 3: Reporting*

June Lake PUD will prepare and submit monthly progress reports on overall project status

**Budget Category (b): Planning Design/Engineering/Environmental Documentation**

*Task 4: Final Design Phase*

June Lake PUD will contract with an Engineering firm to complete the design activities for this project

*Task 5: Environmental Documentation/CEQA*

These upgrades to an existing facility are exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) in accordance with Title 14, Section 15301, page 207 of the California Code of Regulations. June Lake PUD will submit a request for categorical exemption.

*Task 6: Permitting*

June Lake PUD will require a permit through State Water Recourses Control Board Lahontan to bypass the influent to a secondary settling pond while repairs are made to the existing oxidation ditch. This will require up to 3 months to obtain permit.

**Budget Category (c): Construction Administration**

*Task 7: Construction Administration*

June Lake PUD will monitor and sign off on all aspects of the treatment facility upgrades throughout the project duration.

**Budget Category (d): Construction/Implementation**

*Task 8: Construction Contracting*

June Lake PUD will submit bid documents to prospective contractors and issue contract to acceptable bidder

*Task 9: Construction*

Order Materials (Screening system, metering manhole, clarifier lid, oxidation ditch materials, sludge
bed materials)

a) Trench and install approximately 3,000 feet of 15” sewer pipe for bypass
b) Install 6 manholes along this line
c) Line pond 2 with 40 mil polyethylene liner
d) Connect bypass line and drain oxidation ditch
e) Inspect and repair oxidation ditch
f) Install screening box and flow meter
g) Remove clarifier lid and install new lid
h) Install under drain for the (4) sludge beds

June Lake PUD to inspect and sign off on all project steps as they occur.

**Figure 15.** Project map for Wastewater Treatment Plant Upgrades Project – Phase I

## Project #14: Inyo/Mono Watersheds Invasive Weed Control Project

## Project Proponent: Inyo County


### Abstract

The objective of this project is to protect watersheds in Inyo and Mono counties by reduction of current invasive plant species populations to levels at which eradication of individual populations is feasible. Quantitative goals include at least 25% net reduction of weed populations that currently encompass 32,393 gross acres and 46.19 net acres, and survey of the entire gross acreage annually to assess effectiveness. Survey efforts will use GPS units and the existing GIS database to calculate reduction in net acreage.

Numerous government and university studies spanning decades indicate invasive plants threaten water quality and quantity, flood control capacity, wildlife and native plant habitat, working landscapes, recreational opportunities, and local and regional economies. Negative effects of invasive plants are further explained in the following paragraphs, and all effects are linked to further environmental disruption. Invasive species management is one goal of the IRWMP for all of these reasons, and this project is consistent with the plan and its goals.

This project will employ an integrated pest management (IPM) approach and best management practices to control invasive plant species for the benefit of our local population, recreationalists, those receiving water exports from Inyo and Mono counties, and the local native plant and wildlife communities. This component project is important to all other projects because of these linkages and their effects on water quality and quantity. The proposed project will supplement successful and ongoing management activities, and thus the proven and effective management activities can be immediately implemented. IPM methods that will be employed include chemical, mechanical, and biological controls that have been successful in controlling invasive populations, but will further enhance capacity and achieve population reduction. The benefits of this reduction will extend beyond environmental and water enhancement to reduce management costs into the foreseeable future.

This project aims specifically to control and eradicate invasive weeds including Perennial pepperweed (*Lepidium latifolium*), Canada thistle (*Cirsium arvense*), Spotted knapweed (*Centaurea maculosa*), Yellow starthistle (*Centaurea solstitialis*), Scotch thistle (*Onopordum acanthium*), and Russian knapweed (Acroptilon repens) that threaten the Owens, East Walker, and West Walker River watersheds. This biological pollution inflicts many adverse effects on watersheds including:

- Water issues such as increased erosion leading to increased sedimentation, lowered quality and decreased flood control capacity
- Native habitat issues such as lowered species diversity, damaged native plant communities and compromised wildlife habitat
- Working landscape impacts such as lowered property values and a threatened local agricultural economy
- Air quality issues such as increased dust events leading to public health impacts
- Recreation impacts such as impediments to access, and aesthetic degradation.

- Fire issues including changes in fire regimes and increased fire severity. Fire issues exacerbate each of the aforementioned problems.

The Eastern Sierra Weed Management Area (ESWMA) group will collaborate with and contribute expertise to this project. This multiple-stakeholder group of public and private entities includes:

- Inyo and Mono Counties Agricultural Commissioner's Office
- Inyo County Water Department
- Inyo National Forest
- Humboldt - Toiyabe National Forest
- Bureau of Land Management Bishop Field Office
- Bureau of Land Management California Desert District
- Los Angeles Department of Water and Power
- California State Parks
- California Department of Food and Agriculture
- California Department of Transportation District 9
- CalFire
- Natural Resource Conservation Service
- Inyo/Mono Resource Conservation District
- Inyo/Mono Cattleman's Association
- Bishop Paiute Tribe

**Completed Work**

Management activities have been ongoing in the project area (all of Inyo and Mono Counties) for many years, and this project is meant to supplement these activities. Ultimately, resources provided to this project will reduce populations to sizes that permit eradication management goals rather than just control. This will reduce long-term management costs by tens of millions of dollars. The project has baseline population data collected, and its feasibility is known as work is ongoing in the project area. Success of this method has been proven in previous projects funded by Proposition 84 and Natural Resource Conservation Service resources on smaller scales. A 2010 Annual Report has recently been completed and is included as supporting documentation for this project.

**Project Map**

See Figure 16.

## Tasks

**Budget Category (a)**

Task 1 – Project Administration:

- Recruitment of seasonal staff
- Management and direction seasonal staff

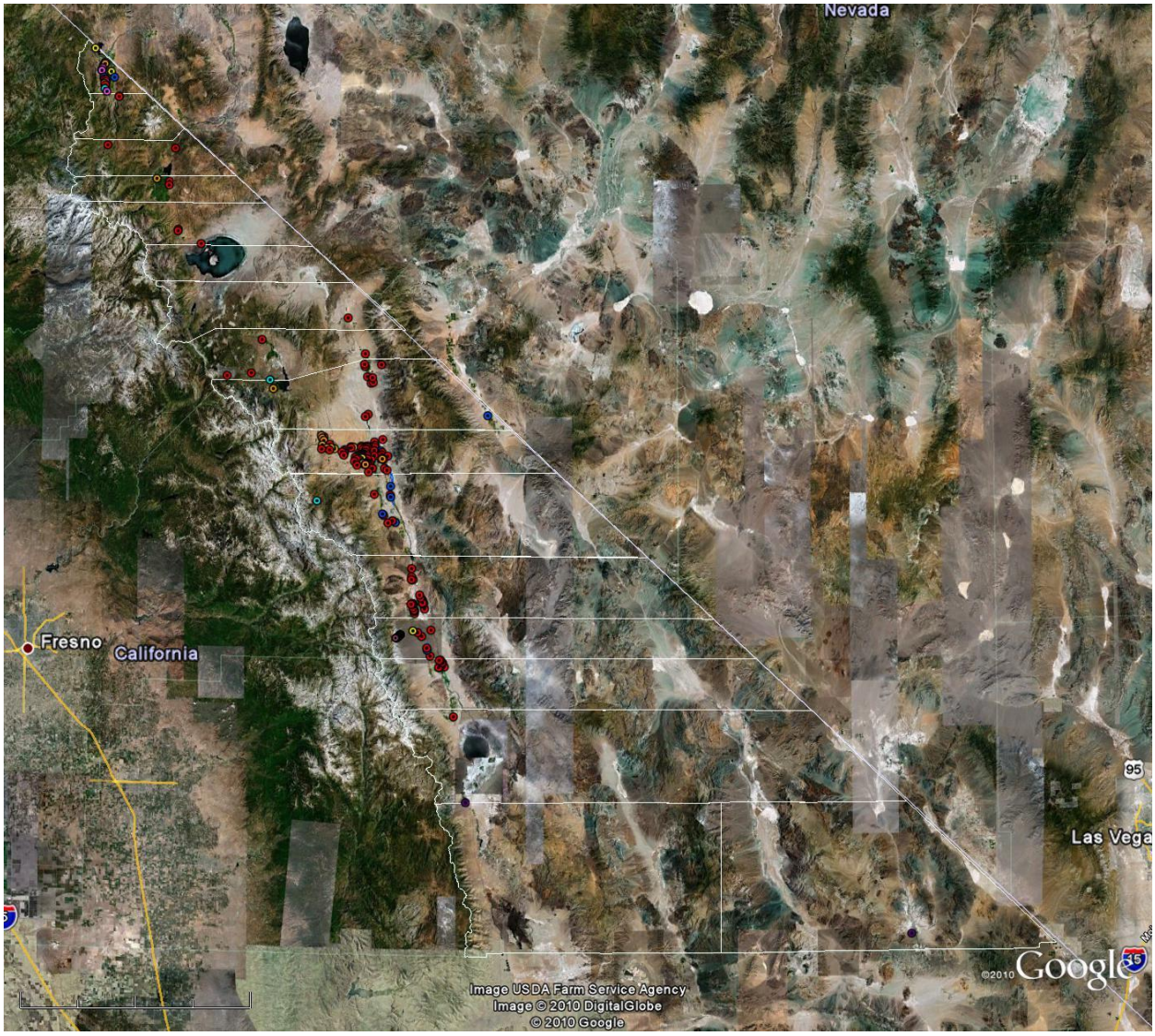
- Management of payroll, project oversight, reporting
- Review and filing of permits
- Analysis and recording of project data

**Budget Category (d)**

Task 1 – Implementation:

- Management of known invasive plant sites using IPM methods on 159 separate invasive plant sites, totaling at least 32,393 gross acres annually over three growing seasons
- Chemical control – crews will target previously listed species using approved herbicide and a low volume, low impact, and directed backpack sprayer application
- Mechanical – where feasible and effective, crews will manually hand-pull weed populations
- Biological control – biocontrol efforts will continue on Yellow starthistle infestations
- Targeted areas will include riparian and connected rangeland areas throughout the listed watersheds

**Figure 16.** Project map for Inyo/Mono Watersheds Invasive Weed Control Project



## Project #15: Town of Mammoth Lakes Stormwater Master Plan Development and Implementation

## Project Proponent: Town of Mammoth Lakes


### Abstract

The total flow length of the Mammoth Creek drainage is approximately 18 miles (*Town of Mammoth Lakes Storm Drain Master Plan, 2005*). The Mammoth Basin includes a system of lakes and interconnecting surface streams in its upper elevations, all of which are eventually tributary either by surface flow or underground flow to Mammoth Creek. Mammoth Creek is identified in the 2003 Section 303(d) list of water quality impaired stream segments as impaired by metals (*State and Regional Water Boards Watershed Management Initiative, 2003*). This listing is qualified with a statement that additional water quality monitoring is required in order to determine the extent of the impairment and the need for a Total Maximum Daily Load (TMDL). Potential sources of elevated metals concentrations are identified as natural sources, urban runoff, and nonpoint sources, all of which the proposed project plans to treat as a result of the implementation of the Stormwater Master Plan.

A proposed project will provide the Town with a comprehensive strategy for managing stormwater, improving water quality, and reducing flooding. Each component of the Plan has a singular focus, all of which are aimed at protecting Mammoth Creek and its tributaries and reducing the risk of catastrophic flooding. In this way, the project will both directly and indirectly address existing and potential threats to water quality, natural resources, and public and private property.

Direct benefits of the proposed project include immediate improvement in water quality and a rapid reduction in flooding. These benefits will be provided by improved infrastructure, drainage, and source erosion control proposed during project implementation. These improvements will reduce the amount of particulate matter, nutrients, and pollutants being discharged into runoff during storm events, thereby reducing the occurrence of clogged culverts and other drain inlets that lead to flooding and property damage. Indirect benefits of the project include the immediate and long-term improvements to riparian habitat. As water quality improves due to the implementation of a Stormwater Master Plan, less sediment, nutrients, and other contaminants found in stormwater runoff will reach Mammoth Creek and its adjoining watersheds.

Many ecological problems have been associated with sediment and nutrient loading (*Lake Tahoe: Preserving a Fragile Ecosystem, 1989*). In essence, untreated runoff can change the chemical, biological, and physical make-up of a water system, making it vulnerable to invasive exotic aquatic species and habitat loss. With the addition of sediments and suspended solids, water temperatures can rise, further altering the aquatic and riparian habitat. By implementing a Stormwater Master Plan, the Town can avoid these adverse impacts and preserve riparian habitat, restore roadside ecology, and restore and protect creeks in the Mammoth Basin.

### Existing Data and Studies

A 2008 study of erosion, drainage, and flooding was conducted in the town of Mammoth Lakes, and the project resulted in an existing conditions report and a final recommendations report, both of which directly resulted in the plans to draft a Stormwater Management Plan. Both reports are included as supporting documentation.

### Project Map

See Figure 17.

## Tasks

The Work Plan has two important components. The first component or Task A is the preparation of a Stormwater Master Plan. The second component or Task B is the development and implementation of high priority and strategic aspects of the plan:

### Task A – Develop Town of Mammoth Lakes Stormwater Master Plan

In order to move the Town towards a more proactive approach to managing stormwater, A Consultant will develop a Town of Mammoth Lakes Stormwater Master Plan. The purpose of the Stormwater Master Plan is to present the Town's management strategy, focused programs and specific projects for managing stormwater within its jurisdiction. By initiating the development of a Stormwater Master Plan the Town will ensure that previous, current and future programs and projects integrate smoothly and maximize the limited resources available to the Town. The plan will also allow the town to plan for and seamlessly integrate any future stormwater or water quality regulatory requirements developed by the Lahontan Regional Water Quality Control Board and the U.S. Environmental Protection Agency (i.e. NPDES Phase II or Phase III).

The Stormwater Master Plan will include, but not be limited to, the following sections:

1. Program Management
    a. Overview and background
    b. Presentation of overall stormwater management strategy
    c. Stormwater Finance Strategy & Funding Plan
    d. Coordination with Mammoth Mountain Ski Resort
2. Capital Improvement Program
    a. Erosion Control & Water Quality Projects
    b. Drainage Facilities (Storm Drain Master Plan)
    c. Flood Control Projects
3. Operations & Maintenance
4. Public Outreach & Education
5. Construction Site Best Management Plan (BMP) Program
6. Residential, Commercial and Industrial Retrofit Program
    a. Stormwater Runoff
    b. Unpaved driveway, access road and parking area
7. Monitoring & Reporting Program

Each section or program component would include the following:

1. General overview
2. Goals (specific to the program component)
3. Description of the recommended policies, programs, projects or BMPs to be implemented (Performance Standards)
4. Recommended monitoring or reporting (Assessment Tools)
5. Identification of the responsible party for managing and implementing each Performance Standard
6. Implementation Schedule - *An example implementation schedule is illustrated below.*
7. Appendices

**Task B – Implement Strategic Aspects of the Stormwater Master Plan**

B1 – Mammoth Mountain Ski Resort

Engage the U.S. Forest Service and the Mammoth Mountain Ski Resort in discussions related to ongoing and future plans for erosion control and stormwater management on the Ski Resort Property.

- Attend up to three meetings and perform one field visit to identify and document ongoing and future erosion control, drainage and water quality programs or projects on the Ski Resort Property.
- During the site visit, identify, document and map all key locations or “hotspots” where surface flows or sediment is discharged onto Town right of way from the Ski Resort.
- Identify and document key locations, which will be addressed by planned Ski Resort projects and document any potential gaps between proposed ski resort projects and identified “hotspots”.
- Develop recommendations memo outlining strategies and potential projects the Ski Resort and Town should consider implementing to address each gap area.

**Task C – Prepare CEQA Document (MND)for Stormwater Master Plan**

C1 – Prepare and circulate a Mitigated Negative Declaration
C2 – Planning Commission Review and Findings
C3 – Town Council Adopts Stormwater Plan and MND

**Figure 17.** Project map for Town of Mammoth Lakes Stormwater Master Plan Development and Implementation Project